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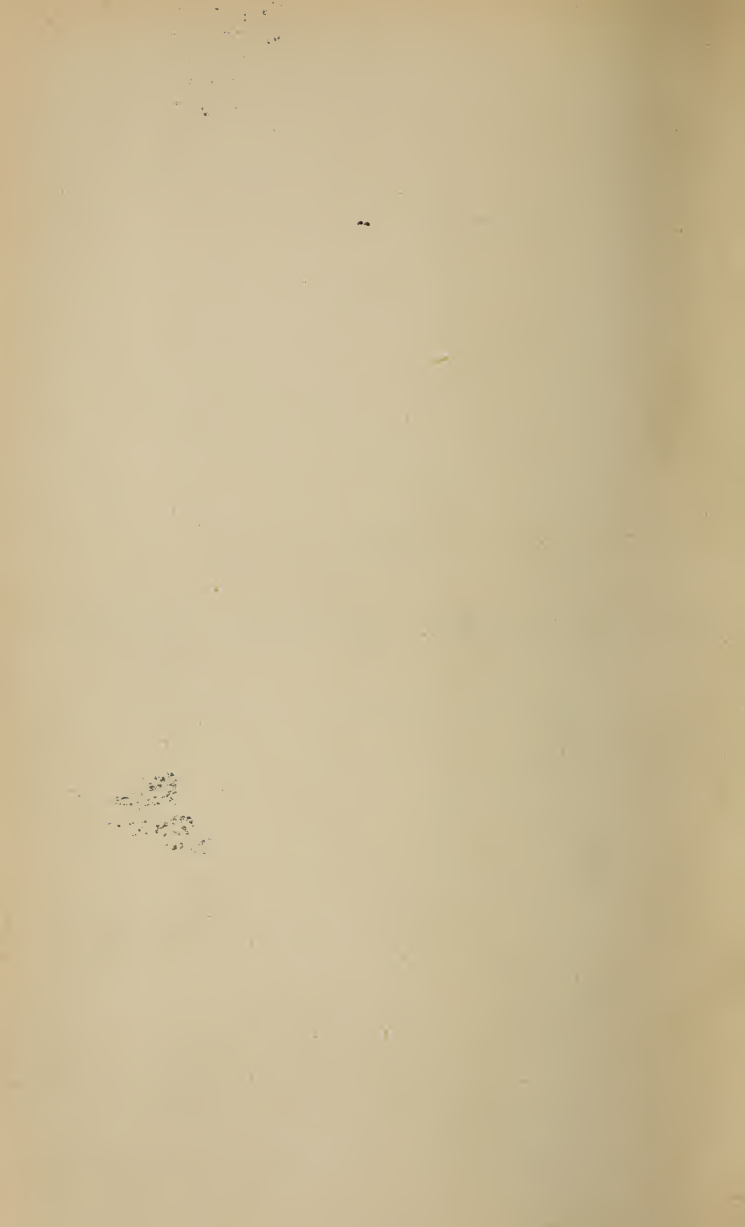






THE  
BRITISH COLONIST IN NORTH AMERICA

*A GUIDE FOR INTENDING EMIGRANTS*



# THE BRITISH COLONIST



IN

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A GUIDE FOR INTENDING EMIGRANTS



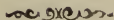
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## P R E F A C E.



MANY of the descriptive pamphlets concerning portions of North America, in which colonization is desired, give exaggerated accounts of the resources of the country, which in some cases are artistically misrepresented. It is, perhaps, hardly to be expected that persons interested in attracting immigration, will set before their readers the many drawbacks they may have to encounter. In other cases persons who have not been long in the country, and are enthusiastic about the novelties of their surroundings, are likely to form erroneous impressions, and thus mislead their friends. . . . With no personal interests whatever to serve, and much practical experience, the present writer has collected information on various subjects which may prove useful to persons intending to emigrate from the old country—and assist in guiding them to the choice of a destination.

THE AUTHOR.





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# THE BRITISH COLONIST.

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## INTRODUCTORY.

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IN selecting any part of North America as a permanent residence, the British emigrant, who is not infected with Republicanism, will give weight to the superior social advantages the Dominion of Canada offers. There are a few chronic revolutionists in the Dominion, who, backed up by the "American Press," attempt to foster disloyalty to the British flag and the Canadian Constitution; but they are a mere unit in the population, and worthy of little attention. In the Dominion, the British settler will have the advantages of living under his own flag, and amongst his own countrymen. Law and order prevail everywhere, and he will enjoy a sense of security, both of life and property, which he may fail to realise in some parts of the United States, where respect for the law is only nominal, men's passions unrestrained, and acts of violence of frequent occurrence. In many of the States he will have to renounce his allegiance in order to purchase and hold property. He will find the judicature of the country, in many instances, in the hands of most unworthy persons elected from the dregs of society by political party influence; and malfeasance in office is of frequent occurrence. Many American newspapers

seem to make a business of collecting, distorting, and exaggerating scandals and defamatory articles concerning Englishmen and England, and thus create a prejudice against them in the minds of a large class of Americans, who are educated by the press. Offences committed by impostors in the disguise of Englishmen of rank are widely heralded and commented upon by newspapers in the United States as evidence of the depravity of the English upper classes. A paragraph has recently appeared alleging that a Scotch nobleman, one Sir Francis Austin, has, by brutal treatment, driven his wife to seek refuge in this country. Although the leading Philadelphia paper announces that there is no such person as a "Sir Francis Austin," this report will be eagerly seized upon by newspapers, and will not be contradicted by the majority of them. The correspondence and opinions of the most scurrilous English radicals are invited and disseminated, and it is no wonder that Americans, who are not well educated and have not travelled out of their own country, and derive their information solely from their newspapers, regard with ill-feeling English gentlemen who come amongst them. Persons, who have no conception of the character and deportment of a gentleman, seem to be easily duped by the swaggering snobs, who so often impose themselves upon the people as English gentlemen. American newspapers are also, in a great measure, responsible for the low tone of social and political morality existing in the country by the flippant, and often vulgar, manner in which they present the records of civil and criminal offences, by an irreverent manner of discussing sacred subjects, and by the vulgar personalities which so often accompany their censure of political opponents.

The corruption and corruptibility of public officers is a sad exhibition of the worst side of Republicanism, and the British emigrant will soon realise that the free institutions of this great Republic are not an unmixed blessing.

In comparing the advantages of the Dominion with those of the United States, education in the former, in rural districts, is much superior. There are schools everywhere in the United States, but the teachers are, as a rule, persons of very superficial education themselves, and beyond arithmetic, and orthography, and history of the United States, little is taught; and bad manners are acquired by association with ungoverned children. There is a large area of fertile land at once available for cultivation in the Dominion, but in the United States, there is such a rush for Government lands of desirable quality, from time to time thrown open, and so much trickery, and even violence to be encountered in the selection, that it is very doubtful if a stranger will succeed in obtaining any. He would, probably, find some other person putting in a claim, and perhaps his life threatened, if he persisted in maintaining his position. Men go on to the Indian Reservations, ceded to the United States, before they are actually opened to settlement, and although the law will not sustain their selections, that may not save a legal claimant from the persecution of those dispossessed. Nothing of this kind will be experienced in the Dominion; and it is extremely improbable that any further trouble will be experienced in the North West Territory from an Indian or Half-Breed outbreak, after the lesson they have received; and the Canadian mounted police keep admirable order throughout the country. No trouble on account of Indians, however, is to be

feared, now, in the Western United States ; and so many eastern farmers have settled in the far west, of late, that social advantages have very much improved, and are steadily improving, and the vast region west of the great chains of mountains to the Pacific Ocean, with its splendid climates, and wonderful resources, offers a most tempting field for the emigrant and colonist who is willing to adapt himself to the ways of the country and of such society as may be available. In the case of men, or families, who have been accustomed to the refinements and luxuries of English life, the amenities of social intercourse will much depend upon their own good judgment and forbearance. They must not expect to find American families of culture and refinement in rural districts of the west, and any marked disinclination to associate with their neighbours, or criticisms of their ways, or the state of the country, will be resented. The people will expect them to find everything superior to what they enjoyed in their own country, and it must be remembered that Americans are peculiarly sensitive to criticism, and do not tolerate any semblance of superiority. Domestic servants, or "helps," as they must be called, and labourers in the west, and in rural districts, expect to be received at the family table and treated as members of the family ; otherwise they will not work for those denying these privileges ; and domestics brought from the old countries will be subjected to influences tending to alienate them from their allegiance, or, in the case of eligible females, they will soon be induced to marry and leave. Domestic servants are very hard to obtain, and families should learn to do their own work : but where Chinamen can be obtained, on the Pacific coast, they do very well.



Families emigrating, who desire the service of domestics, can bring out elderly persons of unattractive appearance with tolerable success.

Before the State Board of Agriculture of Pennsylvania in 1879, Dr. John P. Edge, a member, made the following statement:—"Great Britain shows that she has got so far beyond the possibility of feeding her millions, that she takes products of our soil to the value of 400,000,000 dollars annually and returns us only 98,000,000 dollars in fabrics, and the balance in cash. The widest difference between the foreign and American farmer is in the methods of tillage.

"We depend on machinery to perfect and harvest our crops. With a span of horses and one man, our average farmers of one hundred acres will do *all the year's work*, except threshing and harvesting. He has ample barns; his buildings are centrally located to cover all the advantages of water, drainage, &c.; his house, if not pretentious, has the appearance of comfort and solidity. Everything about gives you the impression that the occupant lives at home.

"In great Britain and on the Continent it is different—all the surroundings speak of age and pinch. The farmer is a peasant; his home a cottage, generally straw or tile covered, low, damp, and cave-like. You see no large waggon houses filled with mowers and reapers. His barn is a shed, often connecting with the dwelling and under the same roof; his harvest in stacks; his domestic animals a part of his family, the stable often serving as a *sleeping apartment* for both. Everything is primitive, and the entire living suggests the renter, who is in reality, *loaded down* with rents and



taxes, and tithes, until after the landlord, the priest, and the State, and the municipality are satisfied, he often has less than one-fifth of his earnings for *his* share."

Such was the sad condition of the British farmer as misrepresented by Dr. Edge. As a matter of fact, the average English tenant farmer is a king to his American cousin, both in the style of living and the comfort and neatness of his surroundings. A thing which will particularly attract the attention of the foreign visitor, in traversing the country, is the hideous and untidy appearance of farm houses. No matter how beautiful the country, naturally, may be, it is defaced by ugly snake fences and the glaring, white-painted, or washed, farm house; the farm yards ankle-deep in mud, and hogs wallowing in mire in their pens. The farmer's style of living and dress corresponds.

We shall now see how his superior methods have resulted.

Mr. James K. Reeve, in an article on "Agriculture as a Profession," which appeared in *Harper*, May, 1889, says: "Upon lands comparatively new, and aided by all our American pluck and enterprise, our splendid machinery, and our 'knack' of being foremost in every undertaking, we produce less than half as great a yield of wheat per acre, as England. Looking at the grand total, we lead the world, at the result of individual effort, and we are behind almost every land but India. Our population is increasing in a ratio never before known in the history of nations; the productiveness of our arable lands is decreasing, and the present generation will see the limit of the territorial expansion of our agriculture. When this limit is reached we shall be

confronted by two alternatives—either to let another and wiser nation feed us, or so to husband our own resources, that the emergency may be met and overcome from within.” “The rise in land values, with consequent increase of taxes, and of interest on invested capital, coupled with the decreased amount and value of the product, is now rendering it extremely difficult for farmers in the older sections to secure an adequate return for the employment of their capital and labour. The statistical agent of the Agricultural Department reported the average income for farmers in the State of New York, for 1886, as being only three-and-one-half per cent. on their invested capital; and this without any allowance for the value of their own time and labour. At that rate, the more land a man has, the worse he is off; and as methods of cultivation which will tend to better this condition are well-nigh impossible, or at least impracticable on large areas, and under existing management, we find, consequently, a growing tendency toward the subdivision of agricultural holdings.” One out of every twenty farmers in the State of New York is hopelessly in debt, and from the Atlantic to the Pacific this evil prevails to a greater or less extent.

. . . . .  
In New Jersey, with the advantages of rich soil, in many places underlaid with marl, and the finest markets in the country close at hand, the farmers complain that they cannot obtain an adequate return for their money, and in some cases find it difficult to make even a living. It is true that the past season has been most unfavourable, but the financial condition of the farmers must be bad to be so affected by one bad season.

They attribute their difficulties to the exactions of commission-men, and the exorbitant local rates of freight, and especially the competition of California producers. The transcontinental rates are so low, owing to the great competition of Railway Companies, that it is difficult to see how any profit can be made, on these rates, and local rates are, therefore, made to counteract the transcontinental. Wherever there is no competition, and combinations have been made by Railroad Companies, the farmer is mercilessly overcharged.

The Governor of the State of Nebraska, in an appeal to the "Trans-Missouri Traffic Association," says that millions of bushels of corn are lying on the ground, going to waste, in that State; and that the farmers who raised it are unable to get it to market on account of high rates. The farmers are unable to pay for provisions and coal, and cannot meet their engagements in consequence. They are burning this corn in place of other fuel. Local business is almost paralysed, and a most gloomy prospect for the opening of spring is before them. Affairs in Kansas are in a very bad way also, and much distress exists in agricultural districts. Governor Miller of North Dakota says, "There is more destitution amongst the people than ever before known in the history of the country." In South Dakota there is great distress and destitution amongst the farmers.

There is no pessimism in this presentation of the condition of the majority of farmers in the United States, but, in striking contrast with this, is the present status of the educated, practical, and theoretical agriculturists, whose fine farms in many of the Eastern and Middle States, skilfully managed, still continue to pay a fair,

and, in some cases, a handsome dividend on the investment. It is, however, now more than ever necessary that an agriculturist should have ample and even surplus capital for a given area, as well as a thorough knowledge of the business connected with it. One of the greatest evils of insufficient capital is shown in the inability of the poor farmer in the West to buy stock to feed his produce to, and thus everything is taken out of his land, and a mere nominal price paid for the produce.

The Ohio Commissioner of Labour reports upon Farm Mortgages as follows :—

AMOUNT OF FARM MORTGAGES CARRIED BY  
VARIOUS STATES.

OHIO, . . . . .	\$701,000,000
INDIANA, . . . . .	398,000,000
ILLINOIS, . . . . .	620,000,000
WISCONSIN, . . . . .	250,000,000
MICHIGAN, . . . . .	350,000,000
IOWA, . . . . .	175,000,000
NEBRASKA, . . . . .	351,000,000
MISSOURI, . . . . .	237,000,000
KANSAS, . . . . .	203,000,000
	<hr/>
	\$3,425,000,000

The census of 1880 showed the value of the farms in these States to be 5,107,040,003 dols. ; they are worth less now than at that time, so we have ten of the most fertile States in the Union being mortgaged for more than two-thirds their value.

The estimated total mortgage indebtedness of the farmers in the United States amounts to the enormous sum of 9,000,000,000 of dollars. The greater portion of

this sum has been spent, not on improvements, but to enable the farmers to live. Mr. Cleveland, in his message to Congress, said, referring to the farmers: "Their lands are declining in value, while their debts increase." Turning to the Dominion of Canada, we find in the Province of Ontario, according to official returns, that the increase in the area of cultivated lands from '83 to '86 was 1.4 per cent., while that of their value was 1.7 per cent., it thus appearing that the value of farm property has *increased more rapidly than its area*.

The condition of farmers in the United States, as shown by Mr. Reeve's statements, is only too true. It then appears, that in spite of the great resources of this magnificent country, of the superiority of its institutions, of American "knack" and enterprise, the American farmer is considerably worse off than the English or Canadian farmer. The protective tariff, and the exactions of monopolies, trusts, and middle-men bear hardly on the American farmer; but, apart from these evils, the causes of the present agricultural depression are: The reckless and exhausting system of farming so long pursued, leaving vast areas of once fruitful lands in a state of depletion; an aggregate production in excess of the home and foreign demands; extravagance in machinery; farming with insufficient capital, and general mismanagement, and improvidence. Men attempting to farm large tracts of land with small capital, must borrow money, at from eight, to even 15 per cent. A bad season ensues, and with it financial embarrassment, and they become "tenants at will" of the mortgagees. The money-lenders are now the landlords of America, and their tenants are barely able to make a living,



and pay the high rates of interest on their indebtedness.

This state of things under a monarchical form of government would be intolerable; but the American farmer, in the enjoyment of the free Institutions of a Republic, thinks his condition, bad as it is, very superior to that of the down-trodden tenants of an Irish or English landlord, who would, however, be happy with a five per cent. dividend on his investment. The newspapers, and the farmer seldom reads anything else, constantly remind him of the superiority of his works and the attributes of his life over those of foreigners; and he looks down on them and their methods; but perhaps now, at the eleventh hour, he is beginning to think he may not have quite a monopoly of the wisdom of the world. Thousands of tons of straw, which should be converted into manure, are annually burnt, and often where the attempt is made, the nutritive qualities are dissipated by improper management. Expensive machinery, bought on credit, is often left out in all kinds of weather. Stock is badly housed and improperly fed, and there is slovenliness and untidiness everywhere. When the land will no longer yield a fair crop, the farmer goes farther west if he can, only to repeat the same process, with the "knack" of being foremost in every undertaking. As for the "pluck" and enterprise Mr. Reeve refers to, one cannot recognise "burning one's candle at both ends" as "pluck," or covering the country with exhausted farms, as enterprise to be admired. For years the leading agricultural journals, and the "Reports of the Agricultural Societies," have been showing him the errors of his methods of farming, but

the average American farmer has a contempt for "book-farming," as he calls it. "He is a practical man," and does not want any theories on farming. He said, "that the land was 'too fat,' and did not want manure." Well! *his* fat is in the fire now, and he will have some trouble in getting out of his present difficulties.

It might be supposed that the American farmer is liberal and luxurious in his style of living, even to extravagance. This is very far from being the case as a rule. His clothing is of the coarsest and cheapest kind, chiefly cotton. He drives to market in a rough farm-waggon with plough horses. He is out of bed at daylight in summer, and lamp-light in winter. His food consists principally of fat bacon, hot bread, the common vegetables, and the inevitable pie, with cheap Rio coffee. Occasionally fresh meat is obtained, which is either cut in thin slices and fried in fat, or into lumps, and boiled till all the juices are extracted, which are thrown away in the water. He has fruit, dried, or preserved, and molasses, with hot batter cakes. The cooking is generally abominable, and he may look forward to a toothless and dyspeptic old age. The middle-men, including machinery, insurance, and a variety of other agents, and the commission-men, who live on the proceeds of his labour, live well, dress well, smoke cigars, and drive about in "buggies." All good articles of clothing, furniture, and other furnishing material, are so expensive that they are beyond the reach of the farmer, and he must confine himself to the plainest and cheapest kinds, for which, however, he pays a price which would buy him good ones in the old countries, and in which goods of American manufacture are sold at least thirty

per cent. less than he pays for them. So much for "protection," as far as the farmer is concerned. Bill Nye, the humorist, says: "Ten of the Western States have got about 3,500,000,000 dollars of mortgages on their farms, and that don't cover the chattel mortgages, filed with town clerks on farm machinery, stock, waggons, and even crops, 'by gosh!' that ain't two inches high under the snow. That's what the prospect is for farmers now. The Government is rich, but the men that made it, the men that fought *peräirie* fires, and *peräirie* wolves, and *Injuns*, and potatoe bugs, and blizzards, and have paid the debt, and pensions, and everything else, are left high and dry this cold winter, with a mortgage of 7,500,000,000 dollars on their farms." An American, writing in *Bradstreets*, says: "The apparent prosperity of Dakota is based upon the expenditure of the capital procured by mortgaging the farm lands. The farmers are spending their farms; mortgages are at 8 to 10 per cent., and the impoverished farmers have to pay an additional 10 per cent. on renewals, so that the interest is really 11 or 12 per cent." Professor Henry, in Wisconsin, said: "One of the richest prairies in the United States is that of the St. Croix valley. To-day the richest part of it is almost without fences; the majority of the farm buildings, especially the barns, are poor, and the people complain bitterly of hard times." The *New York Post* recently called attention to the fact that one of its correspondents counted—in a drive on the main road from Lowell, Mass, to Windham, New Hampshire, (a distance of 12 miles)—six deserted sets of farm buildings, besides several which had already gone to ruin; while fields and pastures were growing up to wood.



The Bureau of Labour of Michigan reports that during the year ending June 30th, 1887, there were 1,667 foreclosures and 244 sales by levy of execution on farm property, or nearly four times more than in Ontario, Quebec, Nova Scotia, New Brunswick, and Prince Edward Island taken together; the total population of Michigan being 300,000 less than that of Ontario alone, and the value of farms being about 230,000,000 dols. less than those of Ontario (*vide* report of Dominion Statistician of Agricultural Department). In some of the older sections of the United States large areas have been abandoned, being no longer capable of producing a paying crop; while in a large section of Ionia, a choice portion of the fertile West, the corn crop has declined in twenty-five years from 40 to 22 bushels per acre. Mr. Reeve remarks "that the restoration of these depleted lands is beyond the capacity of the ordinary farmer."

If we turn to the great pasture regions of the West, we find that similar improvident methods have been pursued by the stockmen; large heads of cattle and sheep with inadequate or no provision for winter, resulting in heavy losses and in an impoverished and degenerated progeny, and the utter destruction of the pasturage by over-crowding. Looking at the timber resources of the country, we find that thousands of acres are annually destroyed by fires, and everywhere a reckless waste is observed. In the present state of the markets, the attempt to restore and place in a remunerative condition depleted farms, will be attended with difficulty, but the educated agriculturist will find methods of doing this, and succeed, when the nature of the soil permits, and with the advantages of a rapidly

increasing population and an increased demand for superior productions.

The British farmer who is at least making a living and in the enjoyment of the comforts of English home life may go further and fare worse. But for those who decide to emigrate, and find superior attractions in this country, the outlook for agriculturists is not quite so gloomy as it might seem. Mr. Reeve says: "Few men realise the possibilities of an acre of ground. The bare statement that it contains 43,560 square feet, conveys little meaning. It is not difficult to grow upon an individual foot of that surface, a product of flowers, plants, vegetables, or small fruits, that is worth five cents. This ratio applied to the entire acre would give a product to the value of 2178 dollars. This result has actually been accomplished."

Unfortunately, however, there is not room for more than a comparatively limited number of market-gardeners, and it is a profession that requires special training, and is rather overdone in the eastern and middle States. But in the West, in the vicinity of growing cities, destined to be manufacturing centres, the intelligent management of even a few acres will, at least, support a family. It is estimated that it requires a capital of at least 300 dols. an acre to manage a market-garden, and the work is hard and constant. There is a growing demand for a superior quality of fruit, and vegetables, and meat. Farms can be bought in favourable situations, which can be made to pay a dividend on the investment, by skilful management, where others have failed. In this country, as in Europe, all grades of "professions" are greatly overcrowded:

much more so, in fact. There are not patients enough for half the doctors, nor clients enough for half the lawyers, nor churches enough for one-fifth the preachers. Young men crowd into the cities in search of employment, and there is a large surplus of book-keepers, clerks and others, seeking an entry into commercial life. In the West, storekeepers of all denominations rush to any point at which the tide of emigration flows, and business competition is keen—and there are more stores than there is business for. A man without interest and special qualifications, will have much difficulty in procuring employment in cities, and in which his salary would do little more than support him, but skilful mechanics can always find employment. The purchasing power of money is so much greater in England than the States, that a higher rate of wages is absolutely necessary. There has been a general cutting down of wages, however, without a corresponding decrease in the cost of living, so that the clerk or working-man will find himself little, if anything, better off than at home. With the exception of some of the common necessities of life, everything is much higher in price, and not so durable as a rule. American goods sold in England are often of a better quality and sold at a lower price than they can be obtained for here. Farming implements, carefully made, are sold for one-third less than the American farmer pays. It is reported that the “Oliver” chilled plough has been sold in Liverpool for seven dollars, but the American farmer pays fourteen.

Farming machinery and implements made for exhibition or exportation are carefully constructed, but much of it sold to the farmers here is defective in structure ;

frequent breakages occur by the breaking of castings, or metal of poor quality, and the blacksmith has plenty of work in this way. Many of the waggons, and most of the vehicles called "buggies," are very flimsy in structure and are constantly breaking.

Americans complain of English manufactured articles being too heavy, solid, and cumbersome; but they certainly go to the other extreme, and make their implements and vehicles too light and weak in structure to wear well, especially when material of the cheapest and most inferior quality is used, as it frequently is.

The settler should learn the names of the best makers before purchasing any machinery or implements. As long as manufacturers can sell inferior articles at remunerative prices, they will not make any change for the better, and the demands have been so enormous that a ready sale has been found for them.

One of the great industries of North America is the "Real Estate" business. This includes money-lending at usurious interest. The term "*Chevalier d'industrie*," might be appropriately applied to many of the fraternity. The people are subject to frequent epidemics of "real estate craze" called "booms." The last and worst of these fevers invaded Kansas City, and from there extended to Southern California, which it left in a state of collapse, and is now lingering on the North Pacific Coast. The real estate man is very ingenious in his methods of starting this "boom," one of which is to put a fictitious price on a piece of property sold; for instance, a stranger arrives in a town, desiring to invest, say 10,000 dollars; he applies to a real estate man, who promises to look out for a suitable investment, and

approaches some property holder who, he knows, would sell at a certain price, say 5000 dollars. He tells him he is not asking enough for his property, and offers to get him a much better price, if he will give him half the excess. The agreement being satisfactory, the lot is sold for 10,000 dols., and the news spreads rapidly that property has doubled in value. In other cases fictitious prices are recorded. Property thus bought at a period of inflation is not, in most cases, worth half that is paid for it. Real estate agents have made fortunes in a week. Money poured in on all sides; trains were crammed with passengers seeking investments; the hotels were unable to hold them, and they slept in the passages and on the stairways. At San Diego Post Office, California, people had to wait their turn in a line extending all across the street for the distribution of mail. Some of them had boxes to sit on, and lunch to eat, to relieve the tedium. Great efforts were made on the part of the International Comp. to extend the boom into Lower California, but with little success; towns and cities were built and laid out, and blocks of building lots sold (on paper), but the reputation of Southern California was too much for Lower California. While the fever lasted, town lots doubled, tripled, quadrupled in value, with a rapidity which took away their owners' breath, and all persons who had cash or could borrow invested in them. Miles off the cities, on desert land, new towns were laid out, and, headed by bands of music, the people, like sheep led to slaughter, were conducted to the sales of the lots. The *Louisville Courier Journal*, commenting on the result of this craze, says: "All investors have suffered, home people



and outside purchasers alike. The majority of the fortunes were lost as suddenly as they were acquired. Few men were able to quit in time. The temptation to make just one more successful deal was too strong to be resisted, and many persons who at one time fancied themselves rich have now nothing but unsaleable lots in a Kansas or California town. This has been a costly lesson to the American people, and its example is not likely to be entirely lost. Booms are hurtful to any town or country, no matter how great its advantages or prospects may be. By no process of calculation or reasoning can the real estate of a town be made to be worth two or three times as much as it was a week before. There is no doubt many parts of the West have been seriously injured by the wild speculation in real estate. Banks have failed, land companies have gone into liquidation, farms are sold under the hammer, buildings are left half-finished, and the general condition of financial affairs is most unhappy. Immigration, which is the life blood of New States, has decreased considerably, and many former settlers are returning to their old homes in the East.

It is said that the assets of the suspended First National Bank of Abilene, Kansas, consist almost entirely of land mortgages, and that its failure was due to the collapse of the great Kansas real estate boom, many pieces of property being mortgaged to it for double their present value. It is proposed that the Government institute an extensive system of irrigation for the purpose of reclaiming millions of acres of land, so far, almost useless. Systems of irrigation by companies have already proved successful, and there can be no doubt

that an immense area of land can, in this way, be made very productive ; and it is estimated that land that is only worth a dollar now, would be valued at at least ten dollars with irrigation facilities. Climate is of the greatest importance to the settler ; and it is too often ignored in view of other advantages offered him. People who settle in malarial districts, or relaxing climates unsuited to their constitutions, will, if not seriously affected, lose their energy and ability for the vigorous prosecution of their business, and many failures have been noted from this cause. Persons of a bilious temperament should avoid districts in which bilious and malarious fevers are prevalent, and the relaxing climate of the Southern States, or climates with much humidity and great summer heat.

Catarrhal-pulmonary and rheumatic affections are very common on the Atlantic coast, and in the vicinity of large lakes in the middle States.

In districts having a very dry atmosphere with great altitude, and sudden variations of temperature, muscular rheumatism prevails. In many of the large cities in the Eastern States, such as New York, Philadelphia, Baltimore, Washington, Pittsburg, Harrisburg, and various cities in New Jersey, and on the Hudson River, the heat in summer is very prostrating, producing sun-stroke, and great mortality amongst small children. In the Central States, Chicago, St. Louis, Indianapolis, and other towns in their respective States, are subject to excessive heat and its attendant evils. The whole valley of the Missouri, from Council Bluffs to New Orleans, and that of the lower Mississippi is very malarious, and subject to high summer temperature, and this is espec-

ally the case with regard to that portion of the valley below St. Louis; as also the valleys of the Ohio, Arkansas and White Rivers. All these valleys are subject to inundations, which greatly increase the prevailing malarial fevers, after the waters subside; and the inhabitants present a jaundiced, melancholy appearance, and take quinine and calomel to excess. All through the flat, swampy lands of Indiana, Illinois, and in many parts of Michigan, fever and ague prevail; also in that portion of Iowa adjacent to the Mississippi River, and in Missouri, along that river and its tributaries. Throughout Louisiana, Arkansas, Texas, and most of Kansas, bilious fever and ague prevail; and in all the lowlands of the Southern States to the east.

Congress passed the "Alien Bill," March 3rd, 1887, which prohibited persons not citizens, or who have not lawfully declared their intention of becoming such, from acquiring, holding, or owning real estate in the territories or the district of Columbia, except such as may be acquired by inheritance, or in the collection of debts heretofore created.

The following is a list of the States and Territories in which aliens may or may not hold real estate—

#### STATES IN WHICH ALIENS CAN HOLD LANDS.

Alabama, Arkansas, California, Colorado, Connecticut,\* Florida\*, Georgia, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Mississippi, Missouri, Nebraska, Nevada, New Jersey,

\* Resident aliens may hold lands, and non-resident for receiving only.



North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Vermont, Virginia and West Virginia.

STATES AND TERRITORIES IN WHICH ALIENS CANNOT HOLD  
LANDS.

Alaska, Arizona, Dakota,\* Delaware,\* Idaho,\* Illinois\*† Minnesota,‡ Montana, New Mexico,\* New York,\* Utah,† Wisconsin,† Wyoming, District of Columbia, and Washington.

In the purchase of any property, or in any kind of investment, extreme caution is necessary. The country is full of land-sharks on the look-out for tender feet, as newcomers are called ; and their ingenuity in methods of deception is remarkable. The county records of property should be examined for mortgages, and the "Deeds" of the property signed by all persons having any sort of claim.

A mistake Englishmen make, is paying too much ; for the price is nearly always advanced to meet their demands. The strictest business methods should be adopted in all financial transactions, and if you allow any one to get "ahead of you," as it is called, by a smart "Yankee trick," the odium will fall on *you* unfortunately.

There are no Small Debts Courts, and the expenses of collecting, on "Judgment," a small sum will amount to

\* Residents can hold real estate by becoming naturalized. In Illinois there are special provisions about sale within six years.

† May hold 320 acres only, unless acquired by inheritance or in collection of debts.

‡ By inheritance, or in collection of debts.

more than the sum in question. Thus, a "Judgment" for 14 dollars costs the plaintiff 100 dollars. Litigation is attended with great expense and uncertainty, and is ruinous to a man of moderate means. In the recovery of large sums of money by legal procedure, the client often receives only half the amount awarded. The following extract is from the *New York Herald*: "All hail to Judge Laurence! He has had the courage to pronounce excessive a lawyer's charge of 5,235 dollars, for collecting 9,543 dollars for a widow in Ireland from the estate of her deceased brother in Schenectady. Such exhibitions of heroism upon the bench are too rare to pass unnoticed!"

Political influence and the use of money enters so freely into legal procedures, that verdicts are frequently at variance with the evidence, and "Justice" has the bandage over her eyes so arranged, that she can see who is going to pay the most for her services.

In securing legal advice, great care should be taken in selecting a legal adviser, for there are many pettifoggers who make a business of inciting litigation, and who are most unscrupulous. An alien has the right to appeal at once to the "Supreme Court" from a decision by a County Court. The best way to avoid trouble, in the way of litigation, is to adopt strict business methods, which is the custom of the country. This is specially to be observed in the matter of making contracts. Never pay in advance of work done. There are two bad kinds of paymasters, the one does not pay at all, and the other pays before the money is earned.

The settler can bring in, free of duty, all articles of household effects which can be shown on "affidavit" to

have been in use 12 months. Any reasonable amount of wearing apparel, obviously for the person's own use, and which has been fitted on or worn by him, can be passed through the Custom House; but anything beyond this will subject him to much trouble and annoyance. All tools or implements of any kind in use, pertaining to a person's profession, are free of duty. For any changes, apply to American Consul at Liverpool or London.

Through rates of freight on "household effects" boxed to the Pacific Coast or any terminal point, are about  $4\frac{20}{100}$  dollars per 100 lbs. To the middle States (points on Missouri or Mississippi Rivers),  $1\frac{31}{100}$  dollars per 100 lbs. Heavy articles of household effects can be shipped direct to the Pacific Coast, by vessels from Liverpool, at very low rates.

Goods sent over American roads should be very carefully packed, to save breakage as much as possible. Passengers' baggage, limited to 150 lbs., should be in very strong trunks of medium size. The American "baggage-smasher" handles passengers' trunks very roughly, especially if they have a foreign appearance. If they are very heavy he will not lift, but roll and kick them, and if he happens to be in a bad temper, may drop your trunk on one corner. The American baggage-system is, however, nearly perfect, and the "wreck" of your baggage with the checks attached is sure to "turn up" at the end of the journey. Any baggage in excess of 150 lbs. should be boxed—(trunks will not be taken except by Express Company at high rates)—and delivered to any of the freight offices in New York, and the charges must be prepaid on all household effects.

Cab hire in New York is high, and the hackmen noted for extortion and impudence. It is said that one of these "worthy men," while bathing at Long Branch, was suddenly confronted by a shark, which, however, "blushed" and left him.

The stranger should ask the hotel-clerk to settle for him. Persons desiring to remain any time in New York, for a week or more, in an economical way, can, by looking at the *Herald*, select a small room in a respectable house and street for two dols. per week, and get their meals at restaurants at from 40 cents. to 75 cents. Street cars and elevated railroads will convey a passenger, with small valise only, to any part of the city, on their routes, for 5 cents. Rates of transfer for baggage to and from any part of the city to points of departure are 50 cents. for a trunk and 40 for a valise. One trunk can be taken on a cab free. Two classes of tickets are issued by the railroad companies, the limited and unlimited. On the former no stop can be made, on the latter, sold at an advanced rate, the passenger can, on informing the conductor, break the journey at any point. This applies to first-class tickets only; but on second-class, or colonist tickets, west of the Missouri River to the Pacific Coast, the privilege of stopping 10 days is accorded, for the purpose of seeing land, or any part of the country. At "Kansas City," Omaha, and St. Paul, tourist sleeping-cars for second-class passengers will be found, but up to these points the journey of the second-class passenger is a most trying one, often in a crowded car in a contaminated atmosphere, alternately oppressed with heat and smothered with dust, and without the privilege of adjourning to a sleeping-car; on a second-class ticket

meals are 75 cents. at the stations with 20 minutes to "bolt" them. Passengers for the Southern States can take steamers from New York to all points on the coast. Transcontinental passengers, when at Chicago, should look out for "sharpers," and under no circumstances show their tickets to any but a "conductor" in uniform, or surrender their baggage-checks to any but authorised express agents, for purpose of transfer, if wishing to stop. Baggage checked through to western points will be transferred free of charge, and cannot, as a rule, be got at until its destination is reached; but at "Kansas City," Omaha, or St. Paul, the baggage-master will permit the passenger, on producing his checks, to open and remove such articles as he may require, and there will be time to lay in a stock of provisions for the journey west. Great care must be taken of the checks, or much trouble will be encountered in recovering the baggage; and they should never be given up except on its delivery. On arrival at the end of the journey, baggage may be left at baggage department 24 hours without charge. Money should be taken in sufficient quantity for the journey only. Take drafts on a bank in New York, where exchange will be made and "drafts" issued, which are good at any point in the West, on *proper identification* of the person presenting; otherwise a delay must occur for their collection. To avoid this delay, request the banker in New York to forward a "Letter of Credit," with *specimen of signature*, to any bank in the "West," or get "Postal Orders" for small sums. No drafts on New York, or London, will be paid without identification by some well-known person; and where this cannot be obtained, it is necessary for a specimen of signature to be



sent to New York in the first place. Much inconvenience has been caused by neglect of these precautions. As some time will probably elapse before any investment can be made of capital, it should be deposited at interest. Many of the Western Banks allow 3 per cent. on deposits for 3 months and over, varying with the amount. The New York bankers will tell you the "standing" of any bank in the West, on inquiry; or "Savings Banks" in the East can be used. On arrival at New York, or other port, the tourist or colonist should provide himself with Raud, M'Nally & Co.'s pocket maps, referring to any part of the continent they may be going to, which can be obtained at most stationers for a small sum, and are very complete and convenient. Of the routes to the Pacific Coast, the Union Pacific, *via* Ogden and the Sacramento Valley, and *via* the Denver and Rio-Grande line—from Denver to Ogden—afford the finest scenery, starting either from Kansas City or Omaha, but a second-class passenger cannot get a ticket for a continuous journey *via* the Rio-Grande line for Southern and Lower California, the Atchison, Topeka, and Santa Fé, and the Union Pacific, *via* San Francisco. For a long round, with grand scenery, take the Canadian Pacific from Quebec to Montreal, or the passenger can book from eastern cities at the Canadian Pacific office, for a lower rate, *via* Chicago, St. Paul, and Vancouver, to San Francisco; getting a through colonist car at St. Paul. For the South, the Piedmont Air Line, *via* Pennsylvania R.R. from New York to New Orleans and intermediate points in Southern States, is the best; and from New Orleans the Central or Texas Pacific lines, for points in Texas; or, for the latter State, the Missouri,

Kansas, and Texas, from St. Louis, *via* Pennsylvania. The colonist-cars which are provided for second-class transcontinental passengers, are in some ways pleasanter to travel across the plains in than the ordinary Pullman-cars (which cannot be entered by persons holding second-class tickets)—for they are cooler and pleasanter in summer, and not so “close” and overheated as the former. In winter the American car-stove is an abomination in some respects, for there is no regulating the heat, which often becomes insufferable; and if a window or door is opened you are liable to get chilled, and your eyes filled with dust, and your lap with cinders. At night in the Pullman sleeping-cars, the heating stoves being in charge of negro porters, who are unreliable measurers of heat, the unfortunate passenger often wakes up in a sort of vapour-bath. If he has an upper-berth the heat ascends, and he gets an extra share; if in a lower-berth, the air is excluded on all sides, and it is not much better. Passengers arriving from the Pacific Coast are very likely to contract a terrible cold, owing to these overheated cars, and the change of climate.

Another serious objection to the stove is that those who have to sit at the ends of the car are slowly roasted at times, and, finally, if the car upsets, the stove may be deposited in your lap; in fact it is a common sequence to railway accidents, in which cars are overturned, and horrible results follow. A new system of heating by steam from the boiler is being adopted. The great objection to the colonist-cars’ run over the “American” transcontinental lines, is the presence, very often, of very rough and offensive passengers, and the cars are not kept clean on the journey, and, in fact, are often in



a most filthy condition. At some of the termini of these roads, notably at the Union Pacific at Omaha, some attempt is made to sort the passengers, putting the most respectable in appearance into a car by themselves, but no reliance can be placed on this. A party of emigrants amounting to 25 can obtain a car to themselves, and can, then, be very comfortable. The usual plan, with regard to provisions, is to lay in a sufficient stock of canned meats and vegetables, with bread and butter, and tea, etc., which can be made by use of the car stove, or a pocket spirit-lamp. The price of meals, *en route*, being 75 cents. (rather over three shillings, amounting to nine shillings a day), the sum for a large family would be considerable on a four or six days' journey. Bread and fruit can be bought at stations *en route* at a very high rate. Milk is often offered for sale, but tinned condensed milk should be taken. A great nuisance on all ordinary trains is the book-peddler, or "news-agent," who is often offensive and persistent in trying to make you purchase his wares, which he kindly forces on you at a profit, to himself, of 1 to 200 per cent. He plies you with fruit, candy, nuts, and "deadly cigars" at 5d. a-piece. Again he appears, from his store box at the head car of the train, staggering along with a pile of sensational novels up to his chin; which he, unceremoniously, distributes to the passengers, by dropping them into their laps, and, occasionally, a violent lurch of the train may cause an avalanche of "detective stories" to descend on the bullied passengers. Presently the peddler returns and urges you to buy, and scowls if you don't; but he will try you again with something else, until you pay to get rid of him, or get angry your-

self and exchange "civilities." These worthies are seldom permitted in the Pullman-cars, and when there behave themselves. The colonist-cars on the "Canadian Pacific" are superior to any. They are kept clean, and a superior class of passengers are met with. The employees are also civil and attentive to the passengers, and, in every respect, the C.P.R. is the best trans-continental line in North America. A short journey from Quebec, or 15 hours from New York, will place the colonist passenger at Montreal, from which place he will get a through sleeping-car to Vancouver and intermediate points. There are two special limited express trains run over the Pennsylvania railway, which is the best equipped and constructed line in North America. The first of these specials, the Chicago Limited Express, leaves New York at 9 A.M., running the distance of 892 miles in 24 hours, an average of 37 miles an hour. The second special, the Florida Limited, leaving New York at 9.30 A.M., on Monday, Wednesday, and Friday, runs to St. Augustine, Florida, a distance of 1125 miles, in 34 hours; an average of about 33 miles an hour. Both these trains are run through without change, and are splendidly equipped; consisting entirely of drawing-room, sleeping, dining, and ladies' cars. There are library, smoking, and bath-room compartments, and the cars are heated by steam, and have both electric and gas lights (in reserve). Some special improvements in these cars are the observation car, having unusually large and central bay windows, affording an excellent view of the country. There are no square corners, every corner being artistically rounded off and ornamented with quaint designs in carving. For the summer season some

of the new cars have seats upholstered in a white hair fabric, that imparts to them not only a bright, cleanly appearance, but renders them far cooler than the plush now used for this purpose.

The Pullman Safety Vestibules are used on these trains, providing safe communication between the cars, steadying the motion of long trains, and deadening the noise of the wheels. The lavatories, dressing and bath rooms are perfect in their appointments, and there is, also, a barber's room. The electric lights are so arranged that one may sit or lie in one's berth and read. Beyond the ladies' bath-room is a state room, finished in white and gold and hung with rich drapery.

It contains an upper and lower double berth and a sofa. The finishing is elaborate, and the appointments render it a dainty boudoir. Connected with the state-room, and opening into it, is a lavatory and a private toilet-room. The section nearest the state-room is fitted with handsome velour curtains, which, when hung in position, form an improvised compartment for the use of invalids, or others desiring a certain degree of seclusion. The farther end of the car presents a large drawing-room, of similar style and finish ; and, by an ingenious employment of folding-doors, a very complete state-room may be cut off from the main body of the drawing-room. The drawing-room will accommodate five, and the state-room four people, and the two compartments may be used *en suite*, or as separate rooms. All the sleeping cars are appointed in the same manner, with the exception of the ladies' bath-room, which is only provided in one car of a given train. In all cars the toilet-room

for men is entirely enclosed, so that absolute privacy is secured for the toilet.

At stations along the route the quotations of the stock market are received and posted for the information of passengers interested. There is also a stenographer who will attend to any correspondence required, or transmit telegrams. It is even suggested that the use of a phonograph be employed, so that those passengers who dislike the exertion of reading, can have the contents of a book read to them.

In addition to the usual attendants, a ladies'-maid is now appointed. There are excellent meals served in the dining-cars, at a charge of 1 dol. The fare from New York to Jacksonville or St. Augustine is about 29 dols. 15 c. The extra-fare tickets, including one double berth in sleeping-car, or seat in a section of the same, cost 15 and 16 dols. respectively. A Pan-American transcontinental route is now talked of, and, in all probability, in a few years a luxurious journey will be able to be made to the principal cities of South America. The New York Central and the "Baltimore and Ohio" Railways also run limited express trains to Chicago, making nearly the same time. The fastest time made to the Pacific Coast is by the "Western Express," leaving New York at 6 P.M. daily. This is owing to its prompt connections with Western roads, the time being six days, four hours, and twenty minutes, and its arrival at Chicago at 9.30 P.M. the following day. The first-class rate from New York to San Francisco, or other terminal points on the Pacific, is about 85 dols., and by the limited express to Chicago, 89 dols. The extra fare for sleeping-car will be about 20 dols. By the Canadian Pacific from New York or

Boston, to points on the Pacific Coast, the fare is 75 dols. first-class; and time, seven days to Vancouver and two days to San Francisco by rail, *via* Tacovia and Portland, and three days by Pacific Steamer from Vancouver to San Francisco.

The emigrant rate, for steamship passengers only, from New York to Chicago is 13 dols., and from New York to the Pacific Coast, any terminal point, 58 dols. 25 c. This class of passengers must leave New York (by the Pennsylvania route) by the Pacific Mail at 8 P.M., or in special emigrant cars. The arrangements are similar on other lines. Other second-class passengers pay a rate of about 63 dols. from New York to the Pacific Coast, and 17 dols. to Chicago, and can leave on any train but the "limited." They must, however, confine themselves to the forward second-class and ordinary smoking-cars, which on the journey soon become in a most filthy condition from the abominable habits of chewing tobacco and expectorating, and throwing nut shells on the floor. These cars are also very dusty, and have a most fatiguing, vibrating motion, and are most objectionable in every way.

The Canadian Pacific Company issue second-class tickets from Boston, New York, Philadelphia, and Chicago, at 53 dols. from the former, and 37 dols. from Chicago, *via* St. Paul, to all points on the Pacific Coast, available on any train but a limited. The distance from Chicago to St. Paul is 410 miles, from thence to Vancouver, B.C., 1,939 miles. From St. Paul to Portland, Oregon, is 2,272 miles, and to San Francisco 3,044 miles. The distance from New York to San Francisco, *via* Montreal, is about 4,108 miles. From New York to Portland (*via* Chicago and Council Bluffs, Union Pacific),



is 3,125 miles. New York to San Francisco, *via* Kansas City, Union Pacific, is 3,279 miles, and *via* Council Bluffs, 3,224 miles. Chicago to Kansas City, 455, and Chicago to Council Bluffs, 500 miles. From New York to San Francisco, *via* Kansas City and Albuquerque, New Mexico, the distance is (*via* Atchison, Topeka & Santa Fé line), 3,007 miles. The intermediate distances, including points in Southern California, are as follows:—Chicago to Albuquerque, N.M., 918 miles; Albuquerque to Barstow Junction, 744 miles; Barstow Junction to San Bernadino, 81 miles; San Bernadino to Los Angeles, 605 miles; San Bernadino to San Diego, 124 miles. During the winter months the Union Pacific Railway is liable to obstructions by immense falls of snow in its passage through the Sierra Nevada mountains, notwithstanding the construction of forty miles of snow-sheds, which seriously impair the views of the mountains. Some of the cañons are this year filled to a depth of a hundred feet. Immense rotary snow ploughs, to which five or six heavy locomotives are attached, are driven into the snow-drift and force a way through, leaving two huge walls of snow on either side of the tract. This year it is reported that there is as much as 100 feet of snow on the snow-sheds, and unusual difficulty is experienced in keeping the line open. The California and Oregon, short line of the Union Pacific to Portland, and the Northern Pacific Railways are also subject to blockade by snow, but the Canadian Pacific seems, fortunately, exempt from these interruptions; although an immense amount of snow falls in the Selkirk Range. The blockades are caused by drifting, and avalanches, of which the Canadian Pacific has had one experience only.

The transcontinental trains in the States are occasionally stopped and robbed by outlaws called "road agents," and these affairs have been rather frequent of late years, and have occurred principally on the Southern Pacific, Missouri, Kansas, and Texas, and once on the Northern Pacific Railway. In a few cases the male passengers were robbed, but generally the "Express Car" is the object aimed at. The robbery is effected in the following way:—At some small station on the great plains, or in the forests of the Indian Territory, at night, three or four armed men get on the engine as it is about to start, and persuade the engineer to run the train a short distance off, when it is stopped. If it is desired to rob the passengers, two men, seemingly, can do it, going through the cars and taking up contributions from their terror-stricken inmates. If the express car only is wanted, that and the engine is uncoupled and taken away from the train, when it is robbed, and left. While this is going on the employees on the train are pacified by the muzzle of a revolver or Winchester rifle, and in few cases has any effort at defence been made.

The robbers are polite to women, and do not disturb them, and male passengers do not often carry much cash with them, and, therefore, much less is gained than by getting the contents of the safe in the express car, which is now the most fashionable way of conducting the business. The men who robbed the Northern Pacific train in Montana a few years ago have not been captured, and two or more cases have occurred in the past year, on Southern lines. It may seem strange that Americans, who generally carry revolvers, and are usually very free in their use, should permit themselves to be robbed in this



way; but, as regards the employees, their attention being entirely taken up with their duties, they are easily taken at disadvantage and disarmed.

American hotels throughout the continent are, as a rule, well appointed and supplied with many contrivances to contribute to the comfort of their guests. Some Americans, after a short visit, have made many complaints about English hotels, but, excepting perhaps a few of the leading hotels in large cities, there is not in the United States an hotel in which one can get as good a dinner as can be obtained at almost any small provincial hotel in England. In the American hotel of the first class, there is a great variety of food, vegetables, and pastry, but the entrées savour, often, of a common origin, and the meats lack flavour, are generally tough, or their juices dissipated in cooking, and the cooking generally is bad. As regards American meats, they are not yet, even the best of them equal in quality or flavour to English. The best of the American beef goes to England, and to the large cities, and the choicest stall-fed meat falls to the share of the clubs and the plutocrats.

The methods of cooking and serving meats are bad. Meat is cooked, usually, a day or two only after being butchered. There is no such thing as *roast* beef in America, unless in the family of some epicure, or special restaurant. The use of the oven is universal, which will deteriorate the flavour of the best meat. (The invention of a wire gauze door to stove ovens, effects a great improvement in the baking process, but it is not generally used.) When served, beef is cut in slices half an inch thick, and is usually very tough; and mutton chops are not very much thicker, and consist, principally, of carti-

lage and bone. There are restaurants which make a speciality of serving steaks and chops, *à l'Anglaise*, for an extra consideration. Ham and bacon of the quality of that in England is not to be obtained; not because it cannot be produced, but owing to the method of feeding, and the food employed. Swine fed entirely on maize can never be of fine flavour, irrespective of the breed, and when the common hog of the country is in question it is still worse. The object has been to produce quantity at the least cost, and until there is an increased demand for meat of the best quality, no improvement is likely to be made in feeding. Swine flesh produced on the North Pacific Coast, fed on grass and wheat, is much superior in flavour to that fed on maize.

The charges at American hotels range from 2 dols. 50 c. to 5 dols. per day. On the Pacific Coast the charges are lower, being about 3 dols. per day for a first-class hotel. Hotels throughout the South are to be noted for the inferiority of the *cuisine*, with a few exceptions.

## BRITISH COLUMBIA.

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THE Province of British Columbia extends north from the international boundary line about 700 miles, having a breadth of 500 miles, and comprising an estimated area of 250,000 square miles, or 160,000,000 acres. Extending through the Province, in a direction little west of north, are several nearly parallel ranges of mountains. The Cascades extend along the coast from Washington State, and ranging east the Gold, Selkirk and Rocky Mountains are successively crossed.

The general surface of the country is exceeding rough, broken and mountainous. The Columbia River rises in the south-eastern corner, runs northerly around the upper end of the Selkirk Range, and then south between that and the Gold Mountains into the United States. The Kooteney has its source in the same region, makes a long reach to the south, crosses the international boundary-line, crosses again and runs into the Columbia a little north of the 49th parallel. The Frazer River rises at about the 54th parallel, runs south to near the boundary-line, and then makes an abrupt turn to the west and

discharges into the Straits of Georgia near the 49th parallel. The Okanagan River flows out of the Okanagan Lake, about the 50th parallel, and flows south into the United States. The Thompson River rises between the 52nd and 53° of latitude and flows south into the Frazer River. Beyond the 55° of north latitude the interior mountains decrease in height and the surface slopes gradually towards the Arctic Ocean, and in this region are the head waters of the Peace and Skena Rivers, the latter flowing south-west into Barclay Straits, and the former, ranging generally north-east, discharges into Athabasca Lake. Comparatively little is known of the agricultural possibilities of the northern portion of the Province, but the seasons are short and winters severe. In the valley of the Frazer River there is a rich, deep alluvium, very productive; but this river, in its lower portion, is subject to overflow, and the use of dykes is required. Many fine farms are formed, and the production of hay and dairy products are the usual crops. All choice Government land has been long secured on the Frazer, and in the valleys of its tributaries.

The city of New Westminster, situated on the right bank of the Frazer River, 16 miles from its mouth, commanding a fine view of the river and mountains, has increased in population from 2000 in 1880, to 6000 in 1889. It is surrounded by the finest and most flourishing agricultural district in the Province, and choice farms, not easy to purchase, will be valued at 100 dollars per acre and more, according to its situation. The city is attractive in appearance, but the water is not very good; this, however, can be remedied

in the future. It is reported that the Northern Pacific Railway Company, having obtained a controlling interest in the New Westminster, Bellingham Bay and Seattle Railway, will make this the terminus of that road. Several other railroads are projected, and efforts are being made to keep well in the wake of Vancouver. Frazer River is navigable for sea-going vessels up to the city, and light-draught steamers run from New Westminster to Yale, 100 miles up the river. Steamers run regularly between New Westminster and Victoria five days a week ; to points up the river, six days a week ; to Nanaimo (Vancouver Island) twice a week ; to Lulu Island and Sea Island, agricultural settlements, almost daily. In the city are situated the Dominion Land Office, the residences of the Anglican and Roman Catholic Bishops, and the Judge and Registrar of the Supreme Court. The climate is very temperate, the coldest weather last winter being only 24° Fahr. The municipality of Delta fronts on the Frazer River and Gulf of Georgia. It has a population of 3,000 ; Ladner's Landing is the chief place, and the chief salmon packing point on the Frazer. There is an area of 50,000 acres of very rich soil (alluvium). Improved or unimproved land ranges from 30 dollars to 100 dollars per acre. The land is free from timber, but requires dyking. Large crops are grown in the Frazer Valley, *viz.*: Hay averages 3 tons; oats, often 90 bushels; wheat (reported), 75 bushels, and roots from 400 to 800 bushels per acre. Oats weighing 55 lbs. to the bushel have been exhibited. This class of land, although requiring much expenditure in the way of dyking, etc., is a good investment, as it is practically inexhaustible and crops have never failed.



Wheat in the lower Frazer Valley is, however, rather soft, and does not make a good flour; it is not a wheat country. Langley, population 2,500, is situated on the south side of Frazer River, and contains a considerable quantity of excellent land. Fort Langley, the steam-boat landing, is an old Hudson's Bay post.

Dairy farming and stock raising is principally carried on. Farms partially improved can be purchased at 25 to 50 dollars per acre. There are two churches, three schools, five stores, three post-offices, three hotels, one saw and a grist mill. The municipality of Surrey—population, 2,000—extends from the Frazer River on the north to the forty-ninth parallel on the south, and from the coast on Semiahmoo and Mud Bays on the west to the Corporation of Langley on the east, and contains one hundred and twenty-seven square miles of territory. There are also the Settlements of Brownsville and North Surrey, on the Frazer, in this district. In the Serpentine, Clover Valley, Surrey Centre, Alder Bottom, and Kensington Prairie Settlements, the soil is of good quality, and well adapted for growing cereals, peas, roots, vegetables, grass, and small fruits. The Settlements of Mud Bay, Elgin, and North Bluff, on the west, have a rich alluvial soil, producing enormous crops, 100 bushels of oats to the acre being often produced. A Company is formed to reclaim 10,000 acres of tide-flat land in this district, which will be sold at a high price. Most of the land was subject to overflow by high tides, but is nearly all dyked now. On the south side are situated St. Leonards and Hall's Prairie Settlements—the former being on the coast of Semiahmoo Bay, and adjoining the city of Blain, in Washington State. Hall's

Prairie is a fine section of the district, good crops being raised, and dairying being carried on extensively. Land or farms can be purchased.

Stages run regularly, twice each week, between New Westminster and What Cove, *via* Brownsville, Elgin, St. Leonards, and Blain. Owing to heavy freshets, the Frazer River has been making violent efforts to force its way into the Sumas Lake, from whence it would find its way into Washington State, to the great injury of the Province.

One might suppose that Mr. Goldwin Smith had been using his influence in this quarter of the Dominion. Strenuous efforts will be made to prevent this form of annexation.

Maple Ridge—population, 2,000—contains an area of 51,200 acres, and extends along the north bank of the Frazer, a distance of about 18 miles. The Canadian Pacific passes along its entire front, and it has a navigable water front of 15 miles, and the distances to Vancouver and New Westminster are short. This district is entered by the C.P.R. at Stave River, and in a few minutes Whonnock station is reached. There is some good agricultural land here.

Port Haney, six miles beyond, has a heavy clay soil, suitable for brick-making, and there are three yards established. This is the headquarters of the Frazer River Freezing Company, for the shipment of fresh salmon. There is considerable land in the district suitable for agricultural purposes to be purchased at lower prices. Four miles from this is Port Hammond. There is rich loam soil here, adapted for market gardening, and 600 bushels of potatoes to the acre are recorded. Hammond is

a point of call for river steamers, and a station on the C.P.R. At this end of the Maple Ridge district are the Pitt Meadows, one of the largest prairies in the Province, at present subject to overflow of the Frazer. A joint-stock company have undertaken to reclaim this extensive tract, and have agreed with the Dominion Government to complete the reclamation in 1893. The soil is of surpassing fertility, being deep alluvium, and will be very valuable. There is an abundant supply of good water, and fever and ague are unknown.

On the south bank of the Frazer River, fifty miles above New Westminster, is the valley of Chilliwack, twelve or fifteen miles wide, surrounded by mountains. The Chilliwack River flows out of the lake of that name, and runs west, and south into the Frazer. Cereals grow well, vegetables, melons, tomatoes, and a variety of fruits, the climate being warmer in summer. Coal of a superior quality has been found. Limestone is plentiful, and clay suitable for brick-making. Centreville is pleasantly situated in the centre of the valley, and there are some fine farms in this district, and there is much rich soil. This is an old settlement, and land must be bought of private owners. A charter has been granted for a railway, which will run down the centre of the valley from Popcum to New Westminster. At Centreville are three churches—English, Methodist, and Presbyterian. Mail and steamboat communication, daily, with Westminster, Vancouver, and Victoria. Seven miles from Centreville, at Sumas, the farms are larger, and more suited for dairy purposes and stock raising. The climate is healthy and bracing. There is fine scenery, trout fishing and shooting, and many other attractions. In

the Spallumcheon, Salmon, Okanagan, Kooteney, and Columbia regions, there are thousands of acres of land which can be cultivated, although the choicest and easiest to be brought under cultivation have already been taken up. The Kooteney region has been untenable owing to the immense annual inundations caused by the overflowing of the Kooteney Lake. The "Reclamation Company" is making some progress in the work, a canal having been constructed, and preparations made to lower the level of the lake by clearing away obstructions at its outlet. When this work is successfully completed, the land will be sold, and it will be of great fertility. The surrounding country is exceedingly rough, and heavy falls of snow occur in the winter. Marvellous mining developments are being made in this country, and numerous lines of railways projected. It may be said that the mineral resources of the Province are, in all probability, greater than has ever been estimated, and although the agricultural lands are very limited in comparison with its area, every acre available is likely to give a rich return for intelligent cultivation, as the demands for their products increase.

On the Cariboo Road there is a plain 150 miles long, and 60 or 80 wide, and between the Thompson and Frazer Rivers there is reported to be an immense tract of grazing and some arable land. The bunch grass of this region is excellent for cattle, and when the difficulty of providing feed for winter can be overcome, no doubt there is a fine stock region in the north.

At a fair at Chilliwack 75 varieties of fruit were exhibited, and of vegetables a squash, weighing 100 lbs., and a pumpkin, weighing 157 lbs.

Turning to the Peace River district, Dr Dawson, the geologist, estimates that there is there an area of 23,500 square miles of good arable land—of which 6,000 lie within the Province—at an average elevation of about 2,000 feet. The growing season is, however, short in this latitude; and beyond the experiments made with cereals at “Dunvargen,” already noted, nothing positive can be stated. Another transcontinental line of railway, by the route of the “Yellow Head Pass” in the Rocky Mountains, having Port Simpson as its objective point, is projected; and, no doubt, the Peace River district will be traversed, or tapped, and in this way colonised. The Nicola River, flowing out of Nicola Lake, flows west and north into the Thompson River. The Nicola Valley is an old settlement in a bunch grass country, which is now well occupied with stock; and the whole valley is settled. The climate here is quite cold in the winter, the thermometer falling below zero; and it is much warmer in the summer, but dry and bracing at all times, and a very healthy climate. In the valleys of the Upper Frazer, and the Thompson Rivers, and the Shuswap River, and on the shores of the lake, all good places have long been secured by old miners. A good deal of drinking goes on, and it is a sad failing in most of the old settlements. At the Forks of Thompson River, on the Canadian Pacific Railway, 250 miles from the coast, the town of Kamloops is situated. It is one of the oldest towns in the Province; the old North West Company having established a post there, in 1815. The population is about 1000, with an Indian Reserve of 250, camped between the forks. The South Thompson River and the Shuswap Lake are navigable



for steamers, one hundred and fifty miles above Kamloops, to Spalleoursheen. At Siccamoose, seventy-five miles above Kamloops, on Shuswap Lake, the railway diverges from the river and lakes, and traffic to the upper country depends on steamers. Steamers also run down the river below the town, through Kamloops Lake, which is an enlargement of the Thompson, twenty miles long. Stage lines lead to districts in the interior from this point. Nicola Valley is about thirty miles south-west, Grand Prairie thirty-three miles south-east; and Okanagan and Osoyoos districts, extending southward about two hundred miles to the international boundary. Similkameen Valley is attractive, having a good climate and some fertile soil all occupied. Grand Prairie is a bunch grass region, and with Similkameen and Nicola, constitutes an important stock region, from which numbers of cattle are shipped, and much money has been made by stockmen; but it is doubtful if there is sufficient range for more stock than is already there. In the neighbourhood of Kamloops are mineral bodies of iron, mica, copper, and silver. A good quantity of red granite and marble, and considerable veins of coal exist. The climate is dry, and not severe in winter; sleighing only lasting about ten days usually, and the mercury occasionally falling below zero. The most direct route to the Cariboo mining district is up the North Fork of the Thompson River, and there is some talk of a railway branch to the mines. Ashcroft, on the south bank of the Thompson River, near its junction with the Bonaparte, is a station on the Pacific division of the Canadian P.R., and the shipping point for the Cariboo, Clinton, and Lilloet districts in the north. Clinton is 32 miles,



Lilloet 52 miles, and Barkerville, the chief town in the Cariboo district, 285 miles from Ashcroft. Stages leave once a week for Barkerville, and three times for Clinton, with connections for Lilloet. There are some tracks of grazing and agricultural lands in the neighbourhood of Ashcroft, all of any value secured. It is a great trading point, for the mines and materials and supplies are taken from here. Vancouver, the terminus of the C.P.R., a little north of the mouth of the Frazer River, is bounded on the north by the waters of Burrard Inlet, and west by English Bay. In April, 1886, the population was only about six hundred, and now there are seven thousand. The site of the present city was, at the former time, covered with forest and stumps of trees, which have been removed at the cost of 300 dols. per acre, and now there are twenty miles of graded streets, and nineteen miles of sidewalks. In June, 1886, the young city was destroyed by a fire, but was rapidly rebuilt; and now it is a thriving, well-built city, with electric and gas light, and substantial business houses, and a public park. Its development has been wonderful. There are manufactories of furniture, carriage, and building materials, six breweries, and saw and planing mills, with an annual product of a value of over 2,000,000 dols. The Vancouver Water Works Co., with a capital of 250,000 dols., supplies the city with water, conveyed in pipes under the inlet from a point six miles from the city; the system including thirty miles of iron main pipes. The city slopes back gradually from Burrard Inlet and English Bay, the highest elevation being 200 feet, affording sufficient grade for good drainage. There are some good hotels, and tastefully

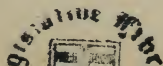
arranged private residences, and from the most elevated portion of the park, consisting of some good acres, a grand view of the mountains of the coast is obtained, on the north side of the inlet, their crests having an altitude of over 6000 feet, and being covered with snow most of the year. The spurs of the Cascades approach very close to the sea, and many of the numerous islands in the gulf are in view, and the scenery all along the shore is grand.

The timber, consisting principally of the Douglas fir, and cedar, is, in many places, of vast size and of fine quality. Trees of 20 feet in circumference, and running up straight as an arrow for hundreds of feet are common. Lumbering is of immense importance and value to the Province; the total number of saw-mills being 26, and producing from 3000 to 110,000 feet per mill, daily. Smelting works are to be established at Vancouver, and there is every prospect of its becoming a large and rich city; and favoured as it is by climate, with adequate sanitary precautions, it must be a healthy and pleasant place of residence.

The agricultural products of the Province are not nearly sufficient for the population, and quantities of provisions of this kind are brought from San Francisco and Portland, and, notwithstanding the import duties levied on these supplies, so abundant and cheap are these products in the States, that they have been sold at a price which has prevented the agriculturists of the Province from successfully competing with them, chiefly owing to the greater expense attending their cultivation and lack of energy on the part of the farmers. As the population is rapidly increasing, and manufacturing, mining, and

lumbering will be the chief employments of the majority of the consumers, it seems reasonable to believe that, with much cheaper farming implements, and the advantages of good markets, intelligent agriculturists will succeed in obtaining a good return for their capital and labour on the rich soil in the places enumerated. A very small area of this rich soil can be made to afford a comfortable living, at least, and notwithstanding the considerable expenditure required to secure it in favourable places, it will pay much better to farm a small area of it than to invest in a much larger one of inferior quality in places remote from the great markets. Much of the beef and mutton consumed in the Province is brought in from the States, subject to an import duty; and cured meats, such as ham and bacon, also lard, are extensively imported, and all these are retailed at a much higher price than they are sold for in the States. The differences of prices between the best beef in the Province and at Portland, Oregon, is about 8 cents per lb. (retail.) The prices of nearly all provisions, machinery, and the necessaries of life generally are considerably more than in the States, and so far the protective tariff duties levied on all necessaries imported from the States have not by any means benefited producers, and have been hard on the consumer.

The rich valley, delta, and tide-flat lands will produce an enormous amount of grass, roots, and other feed, and the breeding and feeding of swine should be very profitable, and, according to the retail prices of beef, 18 to 20 cents per lb.—that also should be profitable, and will be when the “combinations of butchers” can be counteracted. There is probably no part of the Continent in which the



united action of the producers for self-protection is more necessary than in this Province. It is a land of syndicates and monopolies of one kind and another. The harbour of Burrard Inlet is one of the finest in the world. Opposite the front of Vancouver the inlet is over two miles wide, with a depth of six to twenty fathoms. An arm of salt water extends inland for twenty miles from Vancouver, and affords access to a considerable area of rich country.

Leaving Vancouver by steamer in a voyage of about five hours, Victoria, the capital of the Province, on Vancouver Island, is reached. The population is about 15,000, and it has the largest ironworks on the Pacific Coast (except San Francisco) and several smaller iron foundaries and machine shops. It is the oldest city in the Province, and is charmingly situated on the southeastern part of the island, facing the Olympian range of mountains, across the Straits in the State of Washington.

Nothing can exceed the beauty of the surrounding scenery and all along the coast, and the excellence of the roads (in Government control) renders driving and riding particularly pleasant. On the eastern side of the city the park extends to the sea-side, affording an extensive view of the Straits and Sound. There are a number of pretty private residences and some fine public buildings, and improvements are being made in all directions. There are a number of hotels, none of them of an imposing appearance, however; but the Driad Hotel is noted as having the best *cuisine* on the Pacific Coast.

The markets are supplied with the best of provisions. The butchers' shops—decorated, as in England, at Christmas time—at all times exhibit meat of superior quality;

and the quality and flavour of the beef and mutton surpasses anything found in the States. Boating and yachting along the coast and waters of the harbour is attended with great pleasure, and within comparatively short distances shooting and fishing can be enjoyed, and there are many charming places for pic-nics. Admirable order is maintained in the city. There is an absence of the rushing, jostling life of an American city. It is to be noticed in the way business men take their food. They deliberately masticate, and do not bolt it as if they were only allowed ten minutes for refreshments. Taking everything into consideration, including the magnificent climate, it will be difficult to find in the world a more delightful place as a permanent residence. It is, however, rather an expensive place to live in, although the prices of the necessities of life have been somewhat reduced. Small families may live in a quiet way on from £300 to £400 (sterling) per annum. That is in the city suburbs. To enter into any kind of respectable business, a capital of from 10,000 to 20,000 dollars would be required.

The rent of houses ranges from 25 dollars per month for a cottage to 50 and 60 dollars for a moderate-sized house, generally built of lumber. The cost of building a cottage will be about 1500 dollars, and from 2 to 5000 dollars for a comfortable house. Domestic servants (for which the demand is always in excess of the supply) get from 15 to 25 dollars per month. One bank allows a rate of four per cent. on deposits for six months and over, and the usual rates of interest on mortgages are from six to eight per cent.

The wages mechanics receive are as follows, but the



supply usually exceeds the demand, and the employment is not constant :

Stonecutters, stonemasons and brick-				PER DAY.	
layers,	...	...	..	4 dols.	to 5 dols.
Labourers,	...	...	...	1 dol.	75 c. to 2 dols.
Plasterers,	...	...	...	4 dols.	to 4 dols. 50 c.
Carpenters and joiners,	...	...	...	2 dols. 50 c.	to 3 dols. 50 c.
Cabinetmakers,	...	...	...	3 dols.	
Machinists, moulders, blacksmiths,	...	...	...	4 dols.	to 4 dols. 50 c.
Indian farm labour,	...	...	...	1 dol.	

These are the nominal rates which, however, are often cut down by contractors, according to the supply and competition.

Rowing boats cost from 60 to 80 dols., when built to order, and sloops from 200 to 500 dols. There is a Cornish ship-carpenter from a Falmouth yard at Victoria. Good agricultural holdings have changed hands at high figures of late years. Everyone desires a position near the sea-side, and affording good views, and an easy outlet by water. There has, therefore, been a great demand for these choice positions, for which many Englishmen have paid fancy prices. Good hay land is very valuable, the price for hay being from 16 to 20 dols. per ton, baled, which will give a net profit of 7 dols. to 11 dols. per ton. This is the most profitable crop for the farmer who owns tide-flat or delta land, which will yield crops of hay without exhaustion of the soil. The area of such land is, however, very limited and difficult to obtain. It is not an agricultural country, and it is a difficult thing for a man with little capital to establish a farm that will support him by its products. It is possible, by going into the interior of the island, to find desirable places in the valleys, and on the margins of



some of the lakes, where by leading a secluded and rough life for a few years his labour may be rewarded as the country becomes more settled. Many of the old pioneers have gone through all this, under much more unfavourable circumstances than the settler now will encounter. It will be a hard, rough life for the man of small capital, but there are compensations, especially in regard to the climate. No miasmatic fevers to encounter, and the hope of something turning up to his advantage. It is not, however, advisable for one to depend too much on something "turning up." Some young men who have tried it, at Victoria, have come out with empty pockets. It is no place for an idler, without plenty of cash, and the immigrant must have a settled purpose, and "turn something up" for himself.

The following temperature and rainfall for 1889, at Victoria, B.C. lat.,  $48^{\circ} 45' 20''$  N.; long.,  $123^{\circ} 22' 24''$ , is reliable—

	TEMPERATURE.			Rain. Inches.	No of Days Rain.	Snowfall each Month.	No. of Days Snow fell.
	Mean.	Max.	Min.				
Jan.....	38·84	52	24	2·84	14	...	...
Feb.....	41·00	57	25	1·12	7	...	...
March...	48·20	64	30	1·50	14	...	...
April.....	50·52	66	32	1·83	8	...	...
May.....	55·90	79	37	1·01	6	...	...
June.....	58·67	80	37	·77	5	...	...
July.....	60·70	85	40	...	...	...	...
August..	58·67	77	41	1·04	6	...	...
Sept.....	54·00	73	34	2·33	8	...	...
Oct.....	51·82	67	36	2·08	16	...	...
Nov.....	45·02	58	30	1·76	7	...	...
Dec.....	37·34	51	27	2·28	13	Sleet melted as fast as it fell.	3

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Rainfall, 1882	.....	27·85
„ 1883	.....	27·65
„ 1884	.....	23·49
„ 1885	.....	28·14
„ 1886	.....	27·59
„ 1887	.....	38·05
„ 1888	.....	25·77

There is not a day in July or August uncomfortably warm, and the influence of the climate is just sufficiently bracing to prevent any sense of relaxation, without being over-stimulating. During winter the wind on the coast is a little sharp at times, requiring an overcoat. The rain falls principally at night, although there are many days on which, with slight intermissions, it rains all day and night too, but a steady, soft rain without wind. The woods are damp all the winter, and there is much humidity, causing mould to form and moss to grow on the roofs of old buildings; yet catarrhal affections are not common, as might be expected, and children are wonderfully healthy in the winter. Such diseases as occur are to be attributed, either to reckless exposure, the neglect of hygienic rules, and sanitary precautions in respect to drainage. Amongst the poorer class of settlers in rural districts, whose children and other members of families are constantly out in the rain and the wet woods, the immunity from evil effects enjoyed is remarkable. There are some remarkable variations in the amount of rainfall on this coast. It is shown to be very small, comparatively, at Victoria. At Cape Flattery, on the American side of the Strait, it is excessive, being 100 inches or more, while at Port Townsend, opposite Victoria, it is only about 20 inches. Vancouver

Island is about 300 miles in length north-west and south-east, and has an area of about 12,000 square miles. The interior of the island is very mountainous, some of the peaks reaching an elevation of 9,000 to 10,000 feet. In the Victoria district (including the city, Cadboro Bay, Gordon Head, Mount Tolmie and Cedar Hill) there is an area of twenty-seven square miles. Many nicely situated farms are in this district, but the soil is, as a rule, of no depth. North of Cadboro Bay, to the end of the Saanich Peninsula, the country is gently undulating table-land, sloping on the west to the Saanich arm of the sea which extends southerly to near Esquimalt Harbour. This portion of the peninsula is rough and heavily timbered. North of Saanich, and passing a narrow passage between that and Salt Spring, or Admiral's Island, Cowichan Bay is reached. The valley of the Cowichan River, which has its source in Cowichan Lake, about 26 miles from its mouth, is, as regards its lower portion, the finest agricultural region, and one of the oldest settlements on the island. In this district, and including that of Maple Bay, will be found the best society out of Victoria, and land is valuable. Much of the best land is in possession of the Indians. The bench land out of the valley is heavily timbered, gravelly and thin. There are, here and there, small acres of alder-bottom land easily cleared and fertile, all of which have long been in possession of settlers. The island railway passes through this district. Farther north, the Chemanius River Valley has some rich alluvial soil, and valuable farms. The climate in both these settlements is warmer and more favourable for agricultural products and fruit, than in the Victoria or Saanich districts, and choice situations command a

high price. At Chemanius there is some delta, and tide-flat land of great fertility. Along Chemanius Bay there is some fertile land in places, but the whole country is heavily timbered and very rough, back from the sea-coast. All the best land for cultivation has long been secured, and much clearing and other improvements have been made since the construction of the railway to Nanaimo.

Nanaimo—the second largest city on the island, 70 miles from Victoria—has a population of 4,000, and about 8,000 in the district. It has valuable coal mines of the best quality on the whole Pacific Coast. The mountains on the island approach very close to the seaboard here, and there is much more rain, and late frosts occur. Agricultural land is very limited, and of poor quality in this district. North of Nanaimo the mountains recede from the shore, and south of Qualicum, and extending north along Baynes Sound to Comox, is a strip of country containing some good soil, and much of it level, but covered with timber. All the best of this land, commanding the sea-front, has been owned for years by speculators. At Comox, some 60 miles north of Nanaimo, there are valuable and extensive coal deposits. It is a heavily-timbered country, with some magnificent and immense trees of the Douglas fir and cedar. There are some good farms in the district, which are held at a high price. The cost of clearing land, covered with the heavy timber, may vary from 100 to 300 dollars per acre, according to the time employed. The land selected for cultivation has been the alder-bottom and vine-maple lands, on which the removal of the small trees and brush is comparatively inexpensive. In the Comox

Valley there is some rich land, and also much other land which can be utilised when it will pay to clear it by the sale of the timber. All the best timber along the coast, and on rivers suitable for a fling, has long been secured by speculators and saw-mill companies. For years property holders at Comox have been in a state of excitement as to the value of their land, and have not known what to ask, sometimes raising the price from 500 to 2,000 dollars in 24 hours, on a small farm. There is no Government land left in this district worth taking for any immediate utility. The proximity of some high mountains causes late frosts at times, liable to damage fruit and tender vegetables, but the fog which arises in the early morning usually dissolves the frost before the sun comes to cause damage.

The scenery here is very beautiful, and fronting on Comox harbour are some splendid sites for residences. There is more rain here than at Victoria, the rainfall increasing with the latitude and proximity of the mountains. North of Comox, along the coast east of the Crown Mountains, many of which are over 6,000 feet in altitude, there are, in places, small areas of good land. Wherever alder-bottom or vine-maple, and swampy land, which can be drained, occurs in sufficient quantity, a small farm may be established successfully, and there is considerable feed for cattle all through the island, consisting of vine-maple shoots, swamp, and other grasses and shrubs of various kinds; and with a little provision for winter, for a week or two of snow and sharp weather may be expected, they will do very well. At Duncan and Menzies Bays there are Government reservations for some purposes, and other lands are held by speculators.



Continuing north, the Salmon River, which empties into Johnson's Straits, and Campbell River, flowing into the Seymour Narrows opposite Cape Mudge, have in their valleys a considerable quantity of fine land, some of which is open for entry under the homestead laws. North of this to Fort Rupert and Hudson's Bay trading post and Indian Reserve, the country is rough, the timber smaller, and the valleys too small for agricultural purposes, but there are many excellent situations for families of fishermen, who would only require small pieces of land for gardens. Until within the last few years, comparatively little was known of the interior of the island. It is not easily accessible, the passes in the mountains being blocked with snow till late in spring, and the forests so impenetrable that it is only on foot, and with Indians as bearers of provisions, etc., that an exploring expedition can be made. Lately, however, Government surveyors have discovered many valleys in the northern interior containing a considerable amount of good land more or less heavily timbered, and which, on the northern portion of the island, are much wider than those to the south. It is very probable that rich mineral deposits may be found in the interior, when carefully prospected. From the Comox Lake, which gives rise to the Comox River, and can be reached in about 10 miles from the settlement, there is a chain of lakes extending in a southwesterly direction across the island, and with a few portages a canoe voyage could be made into the Albert Canal, which communicates with Barclay Sound, on the west coast. The island railway will, eventually, be extended along the east coast from Nanaimo, through Comox, towards the north end of the



island, and connection made with the new transcontinental line, which, passing the Rocky Mountains by the Yellowhead Pass, will reach Port Simpson, in the Straits of Georgia, by way of Bute Inlet. When this has been accomplished, ways of tapping the interior of the island will be found. Although the area of lands suitable for agricultural purposes, and which at present can be utilised, is very limited, the probability is that much more than is yet known of it may be shown when proper surveys of the interior are made. The fine climate and the immense resources of the fisheries and mineral deposits will no doubt support a considerable population in the future. The west coast of the island is very rough and rugged, but there are a number of small bays and inlets of the sea, and in places areas of good land. There is much more rain on this side, and a heavy surf lashes the coast, especially in winter, when the ocean is anything but "pacific."

The south-west gales are severe all along the Pacific Coast, and there is nearly always, summer and winter, a rough sea, comparatively. The country around Barclay Sound, which is a fine harbour with deep water, is very rough and densely and impenetrably timbered in many places. From the head of the Albert Canal, where there is an old settlement, and in which a new Colony has been lately established, it is only about sixty miles to Nanaimo, and at some time a railway may be constructed. During the winter all communication, overland, is cut off by deep snow on the mountain passes, but a steamer runs between the Sound and Victoria. North of the Sound is a group of islands, Vargas, Flores, and Meares, some of them owned and

used as cattle ranges by stock men in Victoria. North of this the country is principally occupied by Indians, who in former days were noted for their outrages on shipwrecked mariners, and many an unfortunate crew perished, and everything cast ashore was taken by the Indians. They are now rewarded for any assistance they render to shipwrecked mariners, and their terror of the British gunboats keeps them in subjection. The Cape Mudge Indians on the east coast were at one time aggressive, and a dangerous set of wretches. At one time they even undertook a contest with a British gunboat sent to punish them, and entrenched themselves and opened fire, but a few shells sent amongst them acted as a wholesome aperient, and since then they have a great respect for blue jackets. They are impudent and inclined to be aggressive to isolated persons, but are not dangerous to settlements. Many of the old miners, years ago, settled on some of the islands in the Straits, and some parts of Vancouver Island, and took Indian squaws as wives. This sort of miscegenation has been indulged in extensively on the island by the old settlers. The Indians are, as a rule, a squalid, ugly set of people, the squaws particularly. They live principally on fish, especially salmon; which at times they will eat when in a condition indescribable. They are good workers, working often for the white settlers, and expert fishermen, and show wonderful dexterity in the management of their canoes. These canoes are made out of a solid huge cedar log, cut out and burnt out, and skilfully modelled. Forward they are fitted with a thwart, in which can be stepped a mast, carrying a large sail. The Indians squat on grass mats in the bottom of the canoe,

and steer with a paddle, and go at a great rate when running free. It is astonishing the rough seas these canoes drive through in safety; and, in the larger canoes, whole families go great distances, carrying their provisions and cooking utensils, and camping on the beach at night, and conveying deer skins and fish to the markets. Occasionally a canoe has been split by a heavy sea and the crew lost, but they are sometimes strengthened by ribs. A canoe can be purchased for 25 to 30 dollars, but the very large ones are more expensive. They are very expert in the use of the paddle, driving their canoes up the rivers by the use of that and a long pole. The squaws are equally expert, and do much of the work of paddling. All these Indians speak a language known as Chinook, common to the tribes of the Pacific Coast, and which is not difficult to learn, and extremely simple when compared with the Welsh language. Vocabularies can be obtained at Victoria, which, in a short time, will enable one to converse with the Indians. An old settler stated that the best way to get on with an Indian, and to win his respect, is to be scrupulously exact in keeping your agreements, never pay more, or less than you promise, and if you promise him a thrashing, don't disappoint him. By reference to a map it will be seen that the Strait of Georgia is full of islands. Many of these are inhabited and very fertile, and enjoy peculiar climatic advantages; for instance, the islands of Hornby and Denman, which are only separated from Vancouver Island by a narrow channel, and lie south of Comox, about 14 miles, enjoy milder climates than that of Comox and the land to the south along the shore. Vegetation is nearly two weeks earlier in

the spring, and frosts do not occur. There is some very rich soil on portions of these islands, which are, however, small, and have long been occupied. The view from Hornby Island is magnificent, taking in the rugged peaks of the Cascade or Coast Mountains to the east, on the main land; the mountains of Vancouver Island on the west, and south, numerous islands in the Strait, and, at a distance of 100 miles, the snowy peak of Mount Baker, altitude, 14,000 feet. On some days as many as fifteen or twenty whales have been seen blowing, off this island, and innumerable salmon can be seen playing in the tide-way. Cereals and vegetables of all kinds are productive, also small fruits. Sheep do well, and the settlers all have small sailing craft, which takes the place of the farm waggon, to convey their products to market. Deer frequent these small islands when not too far off the land, swimming across the channels, and feasting on the settlers' crops at night, no fence being high enough to exclude them. On one occasion the author landed from a canoe on Hornby Island, and complaints being made by a settler of the destruction of his potatoes by deer, he was determined to watch for them that night.

Judging from the tracts the best part of the field to take up a position in, at sundown I took a seat under the shelter of a large log. It was a beautifully calm moonlit night, and for upwards of an hour not a sound, save the splashing of the salmon along shore, broke the stillness of the night. Fatigued with a long canoe voyage, I had almost fallen asleep, when a rustling in the brush put me on the *qui-vive*. Presently a dark object bounded into the field, about sixty yards from my position, and in a few seconds another followed.

The light of the moon, slightly occluded by a small cloud, now shone bright and clear, and revealed a fine buck, standing broadside towards me, and a doe in the rear. A better chance never was offered, and, aiming quickly for the point of the shoulder, I fired an S.S.G. cartridge from the right barrel. When the smoke cleared away I saw, dimly, a deer standing, apparently on the same spot; I then fired the left barrel. While hastily reloading I saw a deer bounding towards my position, and just as I had finished loading, it turned to the fence, evidently badly wounded, and in the act of leaping received another shot, and fell dead over the fence. This was a doe, and I at first thought I had missed the buck, but, on going to the spot on which they had stood, found him dead. There are very few dogs amongst the settlers, and deer not being hunted much with hounds are bold, and will even come into the gardens in front of the houses at night, secreting themselves in the thickets on the island during the day. In Johnstone Strait, north of the Seymour Narrows, are a number of islands unoccupied. Little is known of their soil, but it is probable that some of them would make desirable settlements for a few families. They are, however, at present beyond the pale of civilisation, and frequented by Indians, but it will not be long before white men will take up claims. Life on these islands is very pleasant for those who like salt-water, and with a little company and a good sailing craft to visit settlements and markets occasionally, the life is attractive for one fond of sport and satisfied with a rough, novel sort of life. To go 60 or 100 miles to a market is not thought much of by these islanders. There is seldom much rough water for most of the year, except



in the tide-rips, and the journey is most enjoyable in fine weather. When the island railway is extended to the northern part of Vancouver Island, all of the islands in Johnstone Strait will be more or less valuable. Valdez Island, a little north-west of Cape Mudge, contains an area of five or six thousand acres. There is a good harbour and an admirable fishing station. There is some good land and, on the south end, some open table land. Claims have been taken on this island, but probably no settlement established yet. It is infested with wolves, and panthers are numerous on many of the islands: they get across from the main land by swimming the channels, following up the deer. The Seymour Narrows is a narrow passage between Vancouver Island and Cape Mudge, through which the waters of the Straits are forced with great violence during the flowing of the tide, causing a tide-rip with a velocity of nine miles an hour, and, especially when a strong wind prevails, is exceedingly dangerous for small craft, and even good-sized steamers are not safe at times. The slack of the tide is the time to attempt the navigation for small craft. It is rumoured that when the new transcontinental line is completed, connection will be made with Vancouver Island by bridging the Narrows. In all probability, however, the transfer will be made by ferry.

Texada Island, 20 miles from Comox, is a very rough, rocky island, with valuable mineral deposits, chiefly magnetic iron ore, assaying 68.4 of pure iron. Gold and silver bearing quartz lead have been discovered. Lasqueti Island, close to the former, was stocked with sheep some years ago by a retired naval officer. It is densely timbered, in places, rocky and rough. All the



islands south of this have long been occupied by settlers, the largest being Admiral's Island, on the south-west end of which, many years ago, Mr. A. Pimbury—formerly of Gloucestershire, England—established a fine flock of sheep affording the best mutton on the Pacific Coast. Mr. Pimbury and his brothers built a substantial residence, with tastefully-arranged gardens, containing some English shrubs, on an elevated plateau or bench on the side of the mountain, affording a splendid view of the channel. Their gardens produced vegetables of the finest quality, and a splendid grape vine of the Concord variety is particularly worthy of notice as showing what can be accomplished in this latitude in the way of fruit. This vine, planted at the margin of a large, sloping rock, had spread all over it, and upwards of 500 lbs. of matured grapes have been picked from this one vine. The rock absorbing the heat of the sun during the day greatly assisted the maturing of the grapes, of which Mr. Pimbury made excellent wine. Besides the grapes, apples, pears, and a variety of small fruits were successfully grown; and wild strawberries of delicious flavour covered the plateau and orchard. Just below the house at the foot of the mountain, which at its greatest elevation reaches 2330 feet, is a beautiful, small harbour, affording secure anchorage for sailing craft. Before the construction of the island railway to Nanaimo steamers passed up the channel in front of the house daily. There are several other islands west of this used for sheep runs, but the pasturage has been eaten out and is scanty. They are admirable places for sheep, as there are no wolves or dogs to injure them, and the mutton is of excellent flavour, and commands a good price at Victoria.

Some of the finest islands are in the American waters, all of them thickly settled. The best way to see the various islands and the coast generally, and to enjoy the scenery, climate, fishing, and shooting, is to victual a small sloop or a steam launch. There are lots of harbours for small craft along the coast, and nothing could be more delightful than a summer spent in this way, and trips can be made into the interior of the island from various points. The water is deep almost everywhere, and there is no danger if a knowledge of the tide-rips and reefs be obtained by the charts, and a look-out kept for squalls in the narrow channels amongst the islands. The water is very deep, in some places as much as 40 fathoms close to the rocky shores. The tides are peculiar and uncertain at times. When it is blowing strong up the Strait of Juan de Fuca, the ebb is sometimes very little, and *vice-versa*. The barometer will not give warning of such sudden squalls as occur in the spring. The sky may be perfectly clear, and a mere breath of air prevailing, when a sudden violent gust of wind will descend and catch the unwary mariner under full canvas. These sudden squalls are generally preceded by light puffs of air coming from every point of the compass. To cruise along the west coast of Vancouver, a large craft will be required; not less than ten tons would be the best. A sailing and rowing boat combined is also an excellent way of getting along the eastern coast. The people throughout the Province are law-abiding and orderly, and the law is well administered. In former years the Province was much indebted to the vigorous enforcement of the laws by Sir Matthew Begbie, who was a terror to evil-doers; and the establishment of the

chain-gang of convicts at Victoria, made to work on the public roads, is an admirable institution, respectfully recommended to the notice of our American cousins. Occasionally an American rowdy has paid a visit to Victoria, for the purpose of "painting the town red," in western parlance, but a short experience in the chain-gang has decided them to avoid any repetition of the dose. They never get over the horror of having been made to work on the roads for those Britishers. The establishment of these chain-gangs, in sundry American cities, for the benefit of felonious public officials, would have a most salutary influence. The sight of a fat alderman working in chains in front of his own house (bought with public money) would be refreshing. Four miles west of Victoria is the splendid harbour of Esquimalt, the British Naval Station, which can be rendered absolutely impregnable, when fortified thoroughly. West of this is Sook harbour and inlet, and here, and along the coast for some distance, are some lovely sites for building. Back from the shore it is heavily timbered, and the soil is, as a rule, thin and of poor quality. San Juan harbour, only fit for small craft, is the only one along the coast till Barclay Sound is reached. There are many farms, and some stock ranches on a small scale in the Sook district, but wolves, bears, and panthers destroy sheep.

There is a great variety of sport to be had on the island, and around the coast, in the way of shooting and fishing. There are bears, panthers, and deer, and at the north end near Fort Rupert, the wapiti. Owing to the density of the timber and undergrowth, hunting is attended with much difficulty, and the assistance of

well trained dogs is necessary. The life of a dog is very precarious on the Pacific Coast, for they are subject to a form of gastritis, called salmon sickness, produced by eating dead and decomposed salmon, which are found along streams during the running season. The most marked symptoms are vomiting and convulsions, and if prompt treatment is not given many of them die. Emetics, followed and preceded by mucilaginous drenches, and especially olive oil, or even liquid lard, will save many cases. The Indians do a great deal of hunting, and thousands of deer skins are brought into Victoria by them. The California crested quail is increasing rapidly around the Victoria and Sook districts, and roughed and willow grouse are numerous in the woods, around clearings, and in the alder bottoms and swamps. Wild fowl of many varieties frequent the inlets, lakes, and estuaries. The lakes are full of trout, and into those communicating with the sea, by rivers, sea trout run in the summer and autumn. In June, July, and August, the harbours are full of salmon and sea trout, and can be caught by trolling a spoon or bait. The Indians use a smelt for trolling, and sometimes a spoon, and 70 large salmon have been caught in one day in this way. Smelt, herrings, halibut, haddock, flounders and cod abound on the coast, and crabs of excellent quality, also cray-fish, are caught. In the Frazer River very large sturgeon are caught, and wild fowl are abundant there. North on the Skeena River is one of the great salmon fisheries of the Province. The take of salmon in the Frazer River alone is sometimes 8,000,000 lbs., exclusive of what the Indians procure. There are 21 factories for making canned salmon, 12 of them being

on the Frazer, and the annual production is from 150,000 to 200,000 cases, each containing 48 lbs., in tins; and in addition to this about 5000 barrels of salt salmon are put up. The exports of fish from Victoria in 1888 amounted to 1,159,504 dols. The total value, including that consumed by Indians and the population, is estimated at 4,834,848 dols. The whale, seal, and sea-otter fisheries are also very valuable. A curious fish found on the coast is the oolachan or candle fish. It is smaller than a herring, and something like a smelt in shape. When dried it burns like a candle, so fat is it, and they are delicious eating. They enter the Frazer in May in millions; and in the Nass River about the end of March.

On the Skeena River Valley there is good shooting. Grizzly bears are numerous, and the ptarmigan is found along the valley. In the mountains are wild goats; there are also panthers, deer, and wolves. It is an exceedingly rough country, and almost impenetrable in some places.

There are a number of Indians living in this region; they work for the salmon-packing companies at Port Essington. From the middle of August till nearly the end of October is the best time of year for sport, and canoes must be used up the river, camping out on the banks. Up the river, along the banks in many places, trails will be seen leading down to the edge of the river-bed, made by grizzly and other bears, which, when the salmon are running, come down at night to feast upon them.

By selecting a bright moonlit night, and taking a good position near a fresh trail, an interview may be enjoyed with Mr. Grizzly. This is much the easiest and



best way of getting a shot. It is a little risky, however, as it is difficult to get a good sight with a rifle which should be an express; and the closer the hunter is to a bear before shooting, the safer. Buck-shot destroys the skin, so that the use of it is objectionable, but it would be well to have, in reserve, a shot gun loaded with buck-shot cartridges which at close range in a charge will, if the hunter is steady, settle the matter. Indian squaws are frequently killed by bears, whilst picking berries in the autumn, on which they feed, and they are always about the river and the berry patches, in the season.

The timber of the Province consists of Douglas fir, spruce, white pine, hemlock, maple, oak, cedar, tamarac, poplar, ash, cherry, yew, arbutus, and dogwood. The hard woods are, however, brittle when seasoned, and not much used for manufacturing purposes.

The chief exports are of Douglas fir, a splendid wood admirable for ship-building, being very tough and durable. The trees grow to the height of 300 feet, and are sometimes as long as 150 feet without knots, and eight to nine feet in diameter. Cedar attains a diameter of 17 feet. In 1888, 140,000,000 feet of lumber was exported to Asia, Australia, Africa, and South America.

It is most interesting to observe the ease with which these enormous logs are managed at the saw-mills. The very large ones are cut into rather short lengths usually. They are all dragged by oxen, over "ways," in the woods, and slid into the sea and towed in great rafts to the saw-mill booms. By means of a chain-cable the logs are dragged out of the water, up an inclined plane of staging attached to the mill, and placed on the saw-carriage. By means of two immense circular saws, one over the



other, the slabs are then cut off, the log being easily turned from side to side by machinery. At Tacoma, in the State of Washington, 5000 feet of lumber was made from one tree (reported). The Queen Charlotte Islands, lying between latitudes  $52^{\circ}$  and  $54^{\circ}$  north, and longitudes  $131^{\circ}$  and  $133^{\circ}$  west, contain about 100,000 acres of land suitable for agricultural productions, but mostly covered with dense forest. On the east side there is some open grass land, and some cattle have been put there to graze. There are some interesting tribes of Indians on these islands, very skilful in wood carving. A silver spoon cast and moulded from silver dollars, perfectly made and wonderfully ornamented, is in the possession of Mr. Deems, formerly of the Hudson's Bay Company. The mould used was of some hard wood. The Indians are in subjection and peaceable, but the island is unsettled except by a few fishermen. The Hudson's Bay Company has a trading post at Masset, on the northern island.

The fisheries off these islands will be very valuable some day. Halibut are very numerous, and remarkably fine, and the skil, or black cod, found here, is pronounced superior in quality to other varieties, both as regards the oil and the flavour of the fish. Unfortunately, the depth of water in which they are caught is very great, from 150 to 300 fathoms, which, in former days, would be a great drawback, but no doubt in these days some way will be found of accelerating their journey from the bottom to the fishing-boats. Two schooner loads, brought to Victoria in 1888, have been so approved of that preparations are being made to establish a regular fishery. Dog-fish in immense numbers are caught on the coast, especially on Vancouver, and the product of oil in

1887 was 67,000 gals. The residue of the fish is valuable for manure, and many fishermen make from two to three dollars a day at this business. The rainfall on the Queen Charlotte Islands is excessive, especially on the West Coast, in fact it is almost constantly raining during many months in the year. As it is not cold, however, and the soil is good, and capable of furnishing the necessaries of life to the cultivator, together with the fisheries, which include many other than the varieties mentioned, it is a much more desirable place for a Colony of fishermen than Newfoundland, where starvation is likely to ensue in a bad season. The Charlotte Islands are also capable of affording fine pasture land, grass growing abundantly. It is certain a prosperous Colony will, eventually, be established here, but at present the expense of the necessaries of life, and transportation—there being only one line of steamers visiting the islands periodically, and charging exorbitant rates—will keep people away. The price of Crown lands pre-empted is 1 dol. per acre, and may be paid in four equal instalments. The Crown grant excludes gold and silver ore, and reserves to the Crown a royalty of five cents per ton, on every ton of merchantable coal raised or gotten from the land. It also reserves to the Crown, since the 7th of April, 1887, all timber on the land, except for domestic purposes. A pre-emptor, however, can obtain a license to cut the timber of his pre-emption on payment of dues at the rate of 25 cents per 1000 feet, board measurement. Vacant surveyed lands not the sites of towns or Government Reservations, may be purchased at the rate of 2 dol. 50 c. per acre, paid at the time of purchase, and the cost of surveying must be

paid also. The quantity of land must be not less than 160 acres, or more than 640 acres in any one district.

The chief points in the mining regulations are: "Free miners" only can have right or interest in mining claims or ditches. A "free miner" must be over 16 years of age. His certificates may be for one year, 5 dols., or three years, 15 dols.; not transferable. He may enter and mine Crown lands, or, on making compensation, lands occupied for other than mining purposes. To recover wages he must have a miner's certificate. A free miner can only hold two claims by pre-emption, but may purchase any number. Claims must be, as far as possible, rectangular, and must be staked. The sizes are: "Bar Diggings," 100 feet wide at high water-mark; extending into the river to the lowest water level. "Dry Diggings," 100 feet square. "Creek Claims," 100 feet long in direction of the stream, and in width from base to base of the hill or bench each side. "Bench Claims," 100 feet square. Discoverers of new mines are allowed 300 feet long for each discovery. "Mineral Claims" containing, or supposed to contain, minerals (other than coal) in loads or veins, 1,500 feet long, by 600 feet wide. A twelvemonths' prospecting license for 480 acres of vacant coal land, in one block, may be granted by the Government on payment of 25 dols. If a licensee wishes to purchase the coal lands, he can do so at 2 dols. 50 c. per acre.

On the American border large quantities of haematite are found. Silver has been found near Hope, on the Frazer River. The specimens of ore assayed have given high yields of silver. It has also been found at Yale, on the Frazer, and a rich silver ore has been brought from

Cherry Creek, a tributary of the Shuswap. Native silver has been found at Omenica, in the northern interior, and argentiferous galenas at Omenica and Kooteney. Professor Selwin states that there is every reason to believe that rich mines of silver will be opened in the Province. Specimens received by the Geological Survey from the Rocky Mountains, show a high percentage. Copper has been found in many places, that on Howe Sound being the most promising. Galena has been found in many parts of the Province in connection with gold, and cinnabar has been obtained in the gold washings on Frazer River and the Hope silver ores. Rich cinnabar ore was found on the Hornathco in small quantities. Mercury and platinum have been found in small quantities. Antimony and bismuth have been found at Shuswap Lake; molybdenum near Howe's Sound and on the Cowichan River.

The Exemption Act provides that homesteads, when registered, are exempt from seizure up to 2,500 dols., £500—and goods and chattels are also free to 500 dols., £100. Cattle farmed on shares are also protected from seizure. Public schools are non-sectarian and free to all. School districts may be formed where there are fifteen pupils, between five and fifteen years old.

# MANITOBA.

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A GREAT deal of reliable information concerning Manitoba, the North-West Territory, and British Columbia,



in pamphlets issued by the Canadian Pacific Railroad Company, can be obtained free, on application to Mr. Archer Baker, General European Agent of the Canadian Pacific Railway, 17 James Street, Liverpool.

In no part of North America can land of such fine quality be obtained at so reasonable a price. All choice Government land anywhere near settlements and railroads is taken up, and the best lands of the Railroad and North-west Land Companies are held at from 6 to 10 dols. per acre. The Red River district, comprising the valley of that river, and its contiguous prairies, is composed of soil of surpassing fertility, a deep, black loam, but inundations occur in the spring, when the ice breaks up.

The Red Fork of Red River, which gives it this name, flows out of Red Lake in Minnesota, the waters being of a reddish-brown cast in strong contrast with the whitish, milky appearance of the stream coming from Otter Tail Lake, which henceforth assumes a darker hue. Much of the soil on the banks of the Red River is of a stiff, argillaceous character, and in some places it cracks and bakes together in drying. The enormous quantity of water discharged through this river in the spring floods an immense tract of country at times. The Souris district, in Southern Manitoba, is principally undulating prairie, with a number of small lakes and ponds, and is swampy in many places in spring. There is abundance of fine grass for hay, and it is a good stock country in the summer. There is no timber in this district, except a little on the plateau called Pembina Mountain. Of the central prairie region, the districts of Brandon, Birtle, Minnedosa, Shoal Lake, Pipestone, Virden, Valley



of the Souris, and Qu'Appelle contain an immense area of rich lands, with good settlements, and a most desirable class of settlers. In the Saskatchewan district, owing to lack of railway and market facilities, there is an ample field for the selection of Government lands by those who can rough it and lead an isolated life until more settlements are established. Game will be found more plentiful, and there is more timber and shelter for stock. In the Riding Mountain district of this division, and west of it, the country is much broken with timber, creeks, lakes, and ponds. Towards the western boundary of Manitoba, and in Alberta, the rainfall is less, and shortage of prairie hay has occurred in consequence of the drying-up of wet places and ponds necessary to produce a sufficient swarth, and the amount of hay to be obtained on the prairie is rapidly decreasing—in the vicinity of settlements especially. Some distress and discouragement has been occasioned by serious droughts which have occurred in this region, but the cultivation of large areas of land, the planting of trees, and especially deep ploughing and thorough working of the soil will, in a great measure, correct this evil. The hardships the settler in Manitoba has to endure arise from the length and severity of the winters. Lumber is expensive, and much more of it is required than in warmer countries to build houses and proper sheds for cattle. A great deal of fuel must be burnt, hay and other feed consumed, and a considerable portion of the year spent in winter quarters living on the proceeds of his summer's work.

Where good logs cannot be obtained, which is the case in most parts of Western Manitoba, frame buildings must be constructed having double floors, with paper

lining between; also between the walls, and with double window sashes. Coal is a considerable item in the expenditure; for if fires are not kept up at night, everything in the house will freeze. A cellar under the house, with a double floor, will, if properly constructed and sufficiently deep, be frost-proof. Buildings for stock should have double walls, and some insulating material between—such as tarred paper. Excellent sheds for stock can be built of a framework of timber covered with straw, the walls being formed by straw two or three feet thick, between wattling or slats. These are cheap and warmer than anything built at greater expense. It is of great importance to protect stock from the bitter cold they are often subjected to, not only on the score of humanity, but because it takes less feed, and they come out of the winter so much better, especially young animals. For heating purposes in the house, anthracite coal, having a red ash, is much the best. It is burnt in a base-burning, self-feeding stove, keeping up a steady heat all night, and warming several rooms. An ordinary stove of this kind will consume about one ton a month, depending on the draught and quality of the coal. The ordinary cooking stove, when burnt all day in winter, will consume about one ton per month of bituminous coal. At 9 dollars for anthracite, and 6 dollars for bituminous coal per ton, six months' consumption would amount to 90 dollars for fuel during the winter. The shortness of the working season is another drawback, common, however, to other northern States in the Union. There is very little time after harvest to plough a large area before the ground freezes up, and extra teams must be kept for this purpose; and

the cost of the winter feed, and interest on the capital invested in them, is to be considered. Farm hired-labour is expensive, and will soon eat up the profits if much employed. The earlier settlers in Manitoba had much to complain of in the way of very high prices for farm machinery, lumber, and the necessities of life, but many changes for the better have taken place. Although prices are still kept up higher than they ought to be, yet contrasted with those on the other side of the line, the American farmer has the advantage; and men of revolutionary disposition in Manitoba, incited by Americans, make use of this to foster a spirit of discontent. Until within the last few years American farmers in the West, and on the Pacific, have had the same difficulties to contend with—*viz.*, high prices for farm machinery, and implements, and articles of all kinds not produced in the country, the prices being kept up by “combination” until the competition became so keen that these “rings” were broken. Only a few years ago a common farm waggon, which could be bought in the Middle States for 70 dollars, was sold at 120 dollars on the Pacific slope.

In commencing farming on the prairie lands of Manitoba, a man has a very great advantage over one who has to wrestle with timber and stumps, and wear his life out in clearing a farm. The early settlers in the New England States in the East had all this to contend with, and worse winters added.

The settler on open land, free of stumps and roots, can at once turn the sod at the rate of two to three acres a day with a 16-inch breaking plough and three good horses abreast. He can plant his potatoes in the fur-

rows, turning the sod over them, and raise a good crop. Oats can be sown on the sod, and, perhaps, 20 bushels per acre harvested; but the best crop of all on the breaking is Russian flax, yielding a crop of from six to twelve bushels per acre of seed, worth from 80 to 100 cents per bushel. The average cost of breaking fine, even, prairie land is three dollars to three dollars fifty cents per acre on contract. It will, therefore, be seen that there is a chance of much more than paying the expense of breaking the first year, and this has frequently been accomplished in Iowa, Minnesota, and, probably, Dakota. The best method of ensuring a crop of flax is as follows:—As early as possible in spring, frost being out of the ground to sufficient depth, turn evenly a sod of three inches in thickness laid over flat as can be. When danger of frost is over, and especially when rain is impending, sow broadcast about three pecks of flax-seed per acre, and cut it well in with the rotary disc harrow, going over the ground several times, parallel with the furrows. A smoothing-harrow, with very slanting teeth, that will not turn up the sod, can afterwards be put over with still further improvement. If seasonable rains ensue, the crop is likely to be a good one, but if a dry season, it will be very scanty. Everything depends upon giving the seed as good a bed as possible without turning up the sod. It is cut usually with a table-rake harvesting machine—an attachment to an ordinary mower—or it can be cut with a mower, and hand-raked into small parcels. In the State of Ohio the average crop used to be  $6\frac{1}{3}$  bushels per acre, with from 500 to 800 lbs. of straw. Flax grown in this way is not an exhaustive crop, and it leaves the sod in an excellent condition for

back-setting. The seed is easily threshed out, and the straw, where it cannot be sold to a factory, is useful for many purposes, especially for making frost-proof walls for out-buildings. A guard must be formed round the farm to protect it from prairie fires. Several furrows are ploughed on either side of a piece of ground twenty yards wide all round the farm, and when the season for fire approaches, the grass is carefully burnt. This constitutes a "fire-brake." From the neglect of this precaution, properly done, many farms are destroyed in the States. Root cellars, or pits, should be constructed to preserve all kinds of vegetables. The practice of keeping them in a cellar under the dwelling-house is not a good one. A pit about seven or eight feet deep, and of any dimensions required, can be dug (on elevated ground if possible), the sides being scarped down evenly and a little sloping, and they can be plastered with a mixture of one-part cement to three of sand, wet in small quantities, and put on quickly, the floor being treated in the same way. A double roof, if of lumber, 12 inches apart, well packed with flax straw, or a heavy roof of thatch, should be formed, with a chimney for ventilation. A drain round the eaves of the roof, a double door, closely-fitting and packed with straw, and steps to descend, will complete a frost-proof cellar; but no crevices must be left, and in very cold weather the chimney must be stopped.

Potatoes which, perhaps, could not be sold for 10 cents per bushel in the autumn, may be worth one dollar in the spring if kept over the winter in good order.

During the winter the ground will freeze three or four feet deep, and special provision must be made for stor-



age. Poultry houses should have double walls and other precautions to exclude the cold, and flat perches, three inches wide, used, so that the feathers may protect the feet, or they will freeze. Special attention should be given to the well and the pump, a good one of the non-freezing kind, or the water supply will be cut off. All supplies for the winter should be laid in before its commencement.

Neglect of the precautions enumerated will lead to much hardship, which can be avoided. A house properly constructed, whether of lumber or logs, will save fuel and much suffering, especially to the female portion of the family.

It is not a difficult matter to build an ordinary frame-house, either of one or two storeys, by a man who is fairly handy with tools, as every man ought to be in this country, and, with some assistance at times, he can erect his own house after ploughing and seeding, living in the meantime in the house of some settler, or in a tent or rough shanty of his own, and thus save from 100 to 200 dollars on the house and other buildings.

Very low estimates are made of the amount of capital necessary for a settler to commence with; but, to make a fair start, the following expenditure will be necessary:—

Pair of horses	...	...	...	...	...	\$300
Waggon	...	...	...	...	...	90
Harness	...	...	...	...	...	45
Two ploughs	...	...	...	...	...	46
Mower	...	...	...	...	...	80
Horse-rake	...	...	...	...	...	35
Harrow	...	...	...	...	...	22
Entry of 160 acres	...	...	...	...	...	10



Fencing 40 acres, at 75 cents per rod	...	\$300
Breaking 40 acres, at three dollars per acre...		120
Building of small house	... ..	400
Furnishing (including two stoves)	... ..	150
Food for one year (two persons)	... ..	240
Six cows	... ..	360
One bull	... ..	200
Outbuildings	... ..	150
Sundries	... ..	100
Reserve fund	... ..	500
Total		\$,3148

The produce of five cows (one being reserved for home use) for the year should be at least 600 lbs. of butter, which, at 25 cents per lb., would be 150 dollars. Six calves should be worth 60 dollars, making a dividend of 210 dollars, or about six per cent. on the total investment of £647.

The item of furnishing does not include bedding, table linen, cutlery, and crockery, which should be brought from England.

The item of 500 dollars for fencing 40 acres is great in proportion to the area fenced, but the whole 160 acres can be fenced for 800 dollars, at the same rate per rod. The cost of fencing is a most costly item in the expense of farming in North America. Reliable statistics prove that the fences of the State of Pennsylvania, where posts and rails and snake fences are used, cost not less than 1,125 dollars per 100 acres, or a total cost of 180,000,000 dollars for the State; and the estimated annual cost of keeping them in repair is 10,000,000 dollars; and it seems that the total value of live stock and fencing is about the same. Wire fence is the best and cheapest, and is

easily and quickly erected in the following manner: Lay out the line, and dig out a spadeful of turf every rod. Sharpen the ends of the posts and drive them with a heavy mall, going along the line with a waggon, and standing in it to drive them. Set the corner post firmly, and brace it by boards nailed to two other posts, one on either side of the angle. Place the spool of barbed wire on a bar of iron, so that it will revolve, and set it on the waggon box near the end, removing the end gate. Attach the wire to the corner post (the top one first) by one turn round, well secured by staples. Drive the waggon along the line, unreeling the wire close as possible to the posts, which one man superintends, the bar of iron being secured from slipping off the waggon. When the end of the line is reached, or about 150 yards out, place the waggon in line with the posts, put on the break, and brace the rear axle with a post for that purpose. Pull in the slack of the wire, and attach a log chain to the wire six or eight feet from the waggon wheel, which must be raised from the ground so as to revolve. Take a turn of the chain round the hub of the wheel, and use the latter to wind up the wire tight. When this is done, two men go back on the line, raise the wire to its position, previously marked, or using a measuring gauge, and secure it with staples. While this is being done, the man with the team drives in another post, six feet from the station post, and braces it with boards nailed to both posts. When this is done, the process is continued as before, and in this way a tight fence can be made. The wire should not be strained too tight, but a little experience will settle this point. The wire should stand a strain of 2000 lbs., which allows for contraction in winter. Small

distances of wire can be set with a crank for the purpose.

The cost of erecting a snake fence with rails 12 feet long is as follows: Three thousand one hundred and fifty rails to half a mile of fence, and 12,600 to 160 acres. The cost for making with good timber is 10 dollars per 100; cost of erection, 15 dollars per half mile; total for 160 acres, 186 dollars; not including cost of timber and hauling. When cedar rails are used the fence lasts a long time, but otherwise it decays in a few years and requires renewing.

The material for a fence of three barbed wires only will cost about 30 cents in the States, and nearly 60 cents in the North West, per rod. But such a fence is only useful for cattle, and not a legal fence in many places, a board being required as well.

The cost of hired farm labour is from 25 to 30 dollars per month with board, which will cost the farmer from 35 to 45 cents per day for each man.

The Alberta district is at present the finest grazing country in North America, but there is danger of the range being destroyed by large herds of cattle being kept too long on one range. At a time when immense herds of buffalo existed on the plains, there was always plenty of grass, because the buffalo grazed north in the spring, continually moving on and leaving the ground gone over to recuperate. In the winter they returned and found again an abundant crop of grass. If a proper system of cattle ranging is not adopted, the range will be destroyed as it is in the Western States. Sheep are especially injurious, when kept long on the same ground.

It will be difficult to supply prairie hay for so large a

number of cattle as are likely soon to be on the ranges. The growth of prairie hay rapidly diminishes when annually cut, unless the ground is subjected to inundation. It is not safe to attempt to winter cattle without a supply of hay, and under the most favourable circumstances young stock, if not fed during the severe weather, are checked in development. The most favourable part of Calgary district is already occupied. All the settlements south of Calgary to Fort Macleod are particularly favoured by the Chinook wind, but even here crops are liable to suffer from frost; for there are not more than two months in the year in which the temperature does not occasionally fall to the frost line. By deep ploughing and minute pulverisation and other precautions, good crops may be and are produced, but it is not safe to rely on them, and breeding stock and raising grass or green-oat feed should be adopted. Another trouble is that the rainfall is scanty.

Both Manitoba, and especially Alberta, are well adapted for the dairy, and the settler, with comparatively little capital, can successfully enter into this business, if he has a fair knowledge of the management of it. The native grasses are of particularly fine quality, and a return of 50 dollars per cow, including the value of the calf, is not difficult to obtain. In Minnesota, dairy returns have been most satisfactory to those who have shown good judgment, and circumstances are quite as favourable, if not more so, in Manitoba and the North-West. Most farmers cease milking their cows on the approach of winter in the north-western states, considering the cost of feeding more than the value of the returns, and thereby seriously impairing the milk-produce-

ing qualities of their cows. During a very cold winter in Iowa, when the thermometer often fell as low as  $25^{\circ}$ , a good cow warmly stabled, and fed on prairie hay, with a ration of barley-meal and bran, gave an average yield of six pounds of butter per week, during the whole winter. In Alberta, in a portion of which the winters are comparatively short, an intelligently managed dairy will be the safest and most remunerative investment for a man of moderate capital; and in conjunction with this the breeding of swine. For these two products there will be a constant demand. The breeding of poultry will, also, be a profitable undertaking in connection with a dairy (within certain limits). The profits on a yard of poultry, up to 100 hens, should average one dollar per head. The climate, subject as it is to sudden and great variations of temperature, is not favourable for the use of the incubator; but with a properly constructed house for this purpose, the difficulty may, to a great extent, be overcome. From 75 to 80 per cent. of eggs can be hatched with an incubator, and the chickens, if skilfully managed, will, in every respect, be equal to those reared by the hen. This statement is made from actual experience with the use of "Halstead's Incubator" (Oakland, California). The keeping of poultry for eggs principally is the most profitable; but still more so is the breeding of thorough-bred fowls. In this climate, however, and in all in which severe winters are encountered, considerable outlay is necessary for properly constructed buildings, and without experience and unremitting attention, satisfactory results will not be obtained, on any but a small yard for domestic purposes. The keeping of poultry on a large scale re-



quires peculiarly favourable circumstances to make it a financial success, and no one should attempt it without a thorough knowledge of the subject. The profits on a small number can be shown to be very great, and this has induced many people to undertake the management of a large number and failure has resulted.

There is Government land within 30 miles of Calgarry, but the most desirable land for entry will be found on the Red Deer River, about 100 miles north of Calgarry on the Edmonton road. There is some timber in this district, and plenty of fine land, water, and grass; and although the winters are colder and steadier, there is less danger of summer frosts owing to its distance from the mountains. In the Edmonton district, farther north, there is plenty of excellent land, and large crops are often raised. This is all a fine grass country, and stock will do well if hay is provided for them. North-west and north-east of Edmonton there is rich soil, fine grass, water, and timber, and though the seasons are short, barley, wheat, and fine crops of potatoes and hardy vegetables can be raised. The distance is 200 miles from Calgarry, on the Canadian Pacific, to Edmonton. During the summer, steamers run up the Saskatchewan, and a branch of the Canadian Pacific Railway is to be constructed, which will no doubt be extended into the Peace River district. Persons intending to settle can fit out at Calgarry with team, waggon, and necessary provisions, and drive to Edmonton, in eight days, inspecting the country *en route*, after having received "notes" from the agent at the Land Office. Supplies of all kinds at Edmonton will be expensive at present. Mosquitos are very troublesome in Alberta and the North-West Terri-



tory, anywhere near a stream or lake during the day-time, and horse and cattle flies are terrible plagues both to man and beast. The climate of Manitoba is very healthy and bracing, a little too much of the latter occasionally. In the southern portion of the Province blizzards occur more frequently; they are, however, not nearly so severe or dangerous as those common to Minnesota and Dakota. The cold is often intense in winter; a temperature of  $47^{\circ}$  and  $48^{\circ}$  is recorded. At this temperature mercury, poured into bullet moulds and exposed, was frozen solid in twenty minutes, and the bullets afterwards shot out of a fowling-piece. When the thermometer indicated  $41^{\circ}$ ,  $42^{\circ}$ , the mercury was not frozen solid, but only turned of a lighter colour with a frosted appearance. Going out of doors in this weather affects the breathing like plunging into cold water. There is no wind with these very low temperatures, fortunately, and it is astonishing how well it can be borne in this climate, when properly clothed and ordinary precautions taken. A temperature from  $25^{\circ}$  to  $40^{\circ}$  is often recorded during the winter, nevertheless the cold is not nearly so intensely felt, as in the northern portion of the State of Iowa, when temperature there is only from  $6^{\circ}$  to  $10^{\circ}$ . At these temperatures, with a keen wind and often a blizzard, in Iowa, Minnesota, and Dakota, it is with great difficulty life can be maintained by those exposed to it.

The following narratives will give an idea of the terrible sufferings and dangers incurred by people who incautiously expose themselves to the blizzards of Dakota and Minnesota:—

A few years ago a farmer in Dakota drove a short

distance—six or seven miles—to a small town. The weather was fine and clear when he started, but soon after his arrival, the appearance became very suspicious, and his experience warned him a blizzard was impending. In spite of this, he, in all probability, lost some valuable time, for the storm was upon him in full force before he was half way across the prairie intervening between his home and the town. The thermometer had rapidly fallen many degrees below zero, and a furious and blinding snowstorm raged in his face, filling his ears and nostrils, and obliterating all traces of the road. "Death stared him in the face"; his only chance of escape was by not missing his house. Fortunately, his horses, well-used to the route and left to their own guidance, reached the barn safely. During the ensuing night the snow fell unremittingly and drifted so fast, that, in the morning, the house, on the side next the barn, was packed with snow up to the roof, and all communication with the former cut off. It then became necessary to tunnel through the drift in order to reach the horses and cattle in the barn, a very arduous task—as the snow had to be carried out of the tunnel as fast as excavated, and passed through the house to the other side, and a passage of some fifty yards made in this way before the stock could be fed.

On another occasion a newly-married couple started on their "honeymoon" in a "sleigh." They were overtaken on a prairie by a blizzard of great severity, but the husband, with presence of mind, unhitched and turned loose the horses, and upsetting the sleigh, took refuge underneath with his wife, and wrapped in a buffalo robe, and assisted by the shelter of a snow drift,

which immediately formed, safely weathered a storm in which others perished. The horses, instinctively, made their way back to their stable, and on the subsidence of the storm a relief party set out and found the "happy" pair in the position described.

It is the custom on the plains of Dakota and Minnesota for farmers to attach a line to the barn, leading to the house, for their guidance in these storms; for during a severe blizzard, at a distance of only a few yards, it may be impossible to find the house or barn without the line in hand to guide. With a wind of a velocity of 30 or 40 miles per hour, the snow is driven into the eyes, nose, ears, and mouth, and with the intense cold a man soon becomes confused and stupefied, and many have been lost in this way.

With a good skin robe, or even a heavy blanket, a man can weather any storm, if he buries himself in the snow, making a small aperture to breathe through; and by taking coffee and some rations, as a precaution when taking a risky journey, any emergency, nearly, may be safely met. Spirits of any kind should never be drunk; probably 75 per cent. of the cases of injury and death from exposure to the storms and low temperatures of the north-west of America have occurred to persons under the influence of alcohol. Tea or coffee should be taken as a stimulant when about to encounter a low temperature. In case any portion of the body becomes frozen, friction with snow, or immersion in cold water, by breaking through the ice or otherwise, followed by friction, should be adopted; and under no circumstances should a person be taken to a warm room until a reaction has set in. On one occasion, during a severe storm in

Kansas, a farmer found a man in the road near his house insensible, and frozen from head to foot. In many cases the person frozen would have been carried into a warm house, but in this one, the farmer, very prudently, immediately immersed the body in cold water by breaking the ice, and afterwards removed it to an outhouse, and, by means of friction, established a natural reaction which saved the man's life.

Some of the half-bred Indians in the north-west can endure an amazingly low temperature with little protection. One of these men, with two others, was, while carrying the United States mail to Fort Totten in Dakota, subjected to a terrible ordeal. The story was related by him while acting as guide to a party of hunters in that territory. It was late in the autumn that the party referred to, after a long march, camped on the margin of a lake south of the Sheyenne River. On approach of night it became cold and frosty, and some blankets were offered to the guide, who was not supplied with any. He, however, refused them, and lay down on the bare ground by the camp-fire, and was soon asleep. On asking him next day if he had not suffered from the cold, he laughed and said he thought he could stand almost anything after what he had once gone through. He then told us the following story. *En route* to Fort Totten, he, with two others, mounted, camped on the banks of a small creek in the prairie. Early in the morning the weather looked threatening, but they pushed on, hoping to reach the next camping-place before the storm set in. They were, however, caught half-way, and even their wonderful and instinctive knowledge of locality failed to aid them in pursuing a course, had

such a thing been possible. There was only one small Government blanket (a "contract" one) between them; the small pieces used for saddle-cloths being of little use. Turning loose their ponies, they crept close together under the one poor blanket, and there remained all that day and the ensuing night, during which a thermometer, perhaps, would have fallen to  $30^{\circ}$  or more. In the morning the storm had subsided, and our friend the guide crawled out from between the "dead bodies" of his companions. So intense had been the cold that the poor ponies were found also frozen to death. The guide, taking the mail-bag, set out for Fort Totten, which he reached safely. It is a fortunate thing for Manitobans that they are seldom subjected to these blizzards, in witness whereof it may be noted that the Canadian Pacific trains are seldom if ever blocked by snow-drifts. It is, on the contrary, very unfortunate for the States of Dakota, Minnesota, and Iowa that they are subjected to these terrible storms in winter, and cyclones and tornados in summer, so that neither life nor property is safe from the latter. These States are abundantly supplied with magnificent farming lands, and the climates are very healthy (except when a cyclone strikes one). From the incidents related, the intense suffering of unfortunate animals exposed on the treeless plains of North-West America will at once be understood. With feet drawn together, arched backs, and trembling from the cold, they often present a pitiable spectacle to a humane man, but the average stock-owner in the west cares nothing for this if they can live through it. Year after year the reports of terrible suffering and loss of life of the stock on the plains are made. Stock-men will not go to the



expense, in some instances, of providing hay for the winter, and, in others, hay cannot be obtained. The cattle in the Calgarry district have enjoyed exceptional advantages in finding refuge in the broken country along the foot-hills of the mountains, and plenty of grass; but even here, with the occasional advent of the "Chinook," and immunity from very deep snows, severe loss has occurred. There are many places in the northerly portion of Manitoba and Alberta, such as the Touchwood, Riding Mountain, Blackfoot Hills, and any broken country with groves of trees affording shelter, in which, owing to the superior quality and quantity of the feed, cattle can be safely wintered with a comparatively small amount of feed, as the snow is dry and powdery, and does not crust and prevent their getting at the grass, and they will winter much better and safer than the stock in many parts of the South; especially as they are comparatively little subjected to the piercing winds of the southern plains. Young stock—yearlings and calves—however, should have shelter. In the future there will be more profit as well as pleasure in keeping an improved breed of cattle, and giving them proper shelter. Large three-sided wind-breaks, or sheds covered with straw, grass, or reeds, can be erected at a moderate expense; and, on the score of humanity, laws should be enacted to compel owners of stock to give animals shelter during winter; and for their own pecuniary advantage they should, especially in Manitoba and the "North-West," provide sheds in summer to keep off the flies, which by their torment retard the accumulation of tissue, and in the case of dairy cows considerably diminish the quantity of milk. Cattle will graze from



before daylight up to the time the flies appear—when the sun is hot, and in that time secure a good supply of forage; they can then retire to these open sheds to ruminate in peace, as the flies will not go into a darkened shed; but without such shelter they will be harassed all day.

Most of the winter in Manitoba consists of still bright weather; occasional snowstorms, with a wind which drives the snow before it, called blizzards, occur; but, as a rule, snow does not drift much or fall so deep as in a more southerly latitude. Canadian clothing is admirably adapted for these winters, and with a properly constructed house and warm sheds for cattle, the winters need not trouble the settler. Persons who do not thoroughly make up their minds to like and endure a long and severe winter, however, will not be happy in this climate. The average temperature for the month of January, on which the very low ones of  $47^{\circ}$  and  $48^{\circ}$  occurred—was  $20\frac{1}{2}^{\circ}$ . The highest point reached during the month was  $30^{\circ}$ ; the lowest,  $48^{\circ}$ ; giving a range of  $78^{\circ}$ . The summers are hot, with cool nights, and the breeze is so dry and refreshing, that the heat can be well borne.

From the 17th June to 17th July inclusive, the mean temperature was  $69^{\circ}$ . The warmest day was on July 17th, when the mercury stood at  $96^{\circ}$ ; the coolest was July 2nd, which was  $48^{\circ}$ . The range between the coldest day of January,  $48^{\circ}$ , and the hottest day in July, was  $148^{\circ}$ . These figures may be very startling to some people, but, notwithstanding the extreme temperatures of this climate, the people enjoy excellent health; and their robust appearance, and clear, healthy complexion,

are in striking contrast to those of the fever-stricken inhabitants of very many parts in the United States.

One great blessing enjoyed by the Manitobans is their exemption from the terrible cyclones and thunderstorms of the States ; of which Uncle Sam seems to have the monopoly.

Cattle flies and mosquitos (in the day-time) are a great plague in Manitoba ; the latter, especially, on the Red River, and both, especially on the wet lands, in the south part of the Souris district. Little may be said of the cereals raised, their quality being widely known.

The flavour of the vegetables grown is most excellent ; potatoes are of specially fine flavour, but they are equally as good in Minnesota and Dakota. The climate of Alberta is less severe than that of Manitoba, especially in the Calgarry district and all that portion subject to the warm Chinook wind. The winters are much shorter as regards the severe weather, and it is often pleasant, sunny, and mild weather during the days up into December. In January and February, the thermometer will sometimes fall as low as  $30^{\circ}$ , for a short period only. In the spring, there are frosts at night up into May, and close to the mountains ; frost at night is likely to prevail throughout the summer. The summer and autumn weather is delightful. Nothing can be more invigorating and exhilarating than the effects of this climate, but during the winter the sudden and great change of temperature, which may be  $60^{\circ}$  or  $70^{\circ}$  in a few hours, caused by the Chinook wind, is very trying. The climate in the Edmonton district, although much farther north, is not so cold as Southern Manitoba, although the winter is longer. A record of the coldest days in

January and February, at Edmonton, lat.  $53^{\circ} 40' N.$ , long.  $113^{\circ} W.$ , altitude 1800, gives  $27^{\circ}$  and  $25^{\circ}$ , with a monthly mean of  $3^{\circ} 52'$ , and  $3^{\circ} 68'$ , respectively. At Cumberland House in the Saskatchewan River, lat.  $53^{\circ} 57' N.$ , long.  $102^{\circ} 20' W.$ , altitude 900 feet, the following temperatures are recorded :—

	HIGHEST TEMP.		LOWEST TEMP.
June.....	$87^{\circ}$	.....	42
July.....	98	.....	47
Aug.....	90	.....	49
Sept.....	73	.....	30
Oct.....	68	.....	5
Nov.....	38	.....	10
Dec.....	25	.....	26
Jan.....	25	.....	32
Feb.....	34	.....	35
March.....	50	.....	9
April.....	55	.....	3
May.....	93	.....	27

Wheat ripens well in the limestone districts, and on the prairies, but in others it is likely to be touched by frost.

The following phenomena, indicating the progress of the seasons at Cumberland House, lat.  $53^{\circ} 57' N.$ , and long.  $102^{\circ} 20'$ , taken by a factor of the Hudson's Bay Company, will, with slight variations, give a good idea of the climate—

March 4th. Watering collecting in pools round the house.

„ 7th. Much bare ground visible.

„ 12th. Temperature in the shade rose for first time to  $30^{\circ}$  Fahr.

„ 21st. The River Saskatchewan broke up partially.

„ 26th. A white-headed eagle was seen. This is the first of summer birds to arrive.

- April 2nd. The River Saskatchewan froze over again, after some very cold days.
- „ 8th. First snow-bunting seen (*Emberiza nivalis*).
- „ 19th. Barking crows (*Corvus Americanus*) arrive.
- „ 20th. Geese and swans seen.
- „ 21st. Pelicans and ducks arrive.
- „ 28th. Saskatchewan thoroughly broken up.
- „ 30th. Commercial ploughing.
- May 2nd. A fall of snow to the depth of two feet. (Exceptional.)
- „ 13th. Planting potatoes.
- „ 17th. Wheat, sown on the 8th, above ground ; having germinated in nine days.
- „ 21st. Barley, sown on the 14th, above ground ; germinating in seven days.
- „ 22nd. Leaves of trees expanding rapidly.
- „ 30th. Potatoes, planted on the 13th, appeared above ground. From the 23rd to the 30th in this year, temperature in the shade at 2 P.M., varied from 78° Fahr. to 93° Fahr.
- Aug. 1st. Commenced reaping barley.
- Sept. 2nd. Flocks of water-fowl beginning to arrive from the north.
- „ 3rd. First fall of snow.
- „ 4th. Large flocks of water-fowl flying south.
- „ 11th. First hoar-frost. Birch and aspen leaves turning yellow.
- „ 20th. Snow.
- „ 21st. Heavy snow.
- „ 24th. Thunder and lightning.
- Oct. 1st. Taking up potatoes.
- „ 5th. Leaves all off deciduous trees.
- „ 11th. Thermometer at 2 P.M., in shade, 68° Fahr. (unusually high).
- „ 14th. Water-fowl passing south.
- „ 15th. Bays of the lake frozen over.
- „ 16th. Ground frozen hard.
- „ 17th. Last water-fowl seen.

Wheat, barley, oats, potatoes, &c., can be raised even

at Fort Liard, lat.  $60^{\circ} 5'$  north, long.  $122^{\circ} 31'$  west, but in some years the frost touches the wheat, and prevents the oats ripening. At Dunvegan, on Peace River, in lat.  $56^{\circ} 6'$  north, long.  $117^{\circ} 45'$  west, altitude 778 feet, the cultivation of wheat is attended by uncertain results. In any locality in the vicinity of the mountains, frosts occur and prevent wheat and oats ripening. At Fort Alexandria, on Frazer's River, in lat.  $52^{\circ} 30'$  north, long.  $122^{\circ} 40'$  west, altitude 400 feet, good crops of wheat have been raised with facility, and potatoes of excellent quality at all the places mentioned. At Fort Norman, lat.  $65^{\circ}$  north, in some seasons barley ripens well, and potatoes are of good quality, but occasionally nipped by frost.

There is some good prairie grouse shooting to be had on the wheat fields in August and September, and, towards the end of the former month, ducks in great variety, snipe, and plover arrive from the north, and are found on the lakes, small ponds and marshes everywhere. In the "Riding House" district there are an immense number of ponds and small lakes covered with wild fowl for a short time only, as they go to the "wheat fields" and remain in their vicinity for a few weeks until the ice forms, when they go south.

In the spring the ducks and geese and other wild fowl arrive from the south, and remain for a short time on their way north. In the autumn ducks and geese, etc., are of delicious flavour, being well nourished on the wheat fields. The "golden plover" is found here. They appear in large flocks and frequent fallow lands, especially new breakings, and are of very fine quality, being so fat as to be translucent. Large game is very scarce, so much hunting is done by Indians and half-breeds, and a



long journey into the North and North-West must be made to get any sport.

In the woods, the ruffed and willow grouse are found. The wapiti ranges as far north as the east branch of the river of the mountains in  $59^{\circ}$  north latitude. A small band of buffalo is reported as existing in the north, which will no doubt be protected by the Government. There are some antelope on the prairies, remote from settlements, also bear, moose, goat, and in some very remote and rugged portions of the mountains, big-horn (mountain sheep). A variety of fish exist, bass, pike, carp, white fish and carp, and in the waters of the Saskatchewan two varieties of sturgeon, one a small variety up to 15 lbs.; the other, called by the Cree Indians the Namèyu, ranges from 90 to 130 lbs. Trout are to be found in the mountain streams west of Calgary. The game laws are, very properly, being strictly enforced anywhere in the country adjacent to settlements.

## WASHINGTON STATE—WESTERN DIVISION.

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THE State of Washington—formerly Washington Territory—is bounded on the north by British Columbia, on the east by Idaho, on the south by Oregon, and on the west by the Pacific Ocean. Its area is 69,994 square miles, of which 3,114 are water, leaving 66,880 square miles of land surface, of which it is estimated that 20,000,000 acres are in timber, 5,000,000 acres in rich alluvial lands, and 10,000,000 acres in prairie and plains. The Cascade Range of mountains, extending from north to south, divides the State into two sections, of which the eastern is much the larger. During the winter communication across this range is impracticable, except by railway, owing to heavy snow in the passes. The Olympic Range lies along the coast between Puget

Sound and the Pacific. In common with British Columbia, this portion of Washington, with its magnificent scenery and delightful climate, is most attractive for the tourist and for the settler. Washington is divided into the Western, Central and Eastern regions, having different climates.

Western Washington.—The climate is excellent. The mean temperature at Fort Steilcoom for four years was as follows:—January,  $38^{\circ} 1'$ ; February,  $40^{\circ} 7'$ ; March,  $41^{\circ} 8'$ ; April,  $48^{\circ} 6'$ ; May,  $56^{\circ} 6'$ ; June,  $61^{\circ} 1'$ ; July,  $64^{\circ} 9'$ ; August,  $64^{\circ}$ ; September,  $56^{\circ} 9'$ ; October,  $52^{\circ} 6'$ ; November,  $46^{\circ} 2'$ ; December,  $38^{\circ} 3'$ ; for the year,  $50^{\circ} 8'$ ; three winter months,  $39^{\circ}$ . Rainfall for the six months regarded as the rainy season:—October, 6.93 inches; November, 18.41 inches; December, 4.42 inches; January, 8.69 inches; February, 7.57 inches; March, 2.89 inches; total, 48.91 inches. In some years the annual rainfall is as much as 60 inches or more at some points on the coast. Notwithstanding the excessive rainfall, the climate is extremely healthy during the winter season. Children are not afflicted with catarrhal affections as might be expected. The summer weather is delightful.

Properly speaking, there are but two seasons, the dry and the rainy. The grades of temperature, and the accompaniments which in other countries of the same latitude ascribe the features and title to the four seasons, spring, summer, autumn, and winter, are here obliterated, or at least so dimly marked that the seasons imperceptibly run into each other, and lose their distinctive line of division. It is not unusual for the three winter months to be mild, without snow or ice, the grass grow-

ing meanwhile. In February the weather may occur mild and genial as May, to be succeeded in March or April with the coldest weather of the season, which, however, will only last a short time. In July and August, days, in some portions of which the maximum temperature will reach  $90^{\circ}$  or  $100^{\circ}$ , are sometimes followed by cold nights, occasionally accompanied by heavy frosts.

The rainy season, proper, begins late in October, or early in November, and may be said to continue till the ensuing April. It frequently happens after the first rains have commenced that weeks of fine weather occur. Nights are always cool and refreshing. An average of from seven to ten days of freezing weather may be looked for with certainty, and feed and housing for stock should always be provided, although it is not generally the custom amongst improvident settlers. The extreme mildness of the western portions of Oregon, Washington, and British Columbia, irrespective of latitude, is produced by a thermal current called the "Japanese," having its origin at the equator, near the Philippines and the Malaccas, which sweeps northward until forming two branches; one moves on to Behring Straits, and the other bends eastward along the Aleutian Islands, and then southward along the coast of Sitka, Oregon, and California. The influence of this warm current modifies the climate of the whole Pacific Coast, and extends to the valleys of Montana, and the Calgary district in the North-West Territory of the Dominion of Canada. From California, north along the coast, the rainfall is increased the farther you go north.

Although winter work is considerably impeded by

the rain, people seem to get used to it, and, clad in waterproof suits, pay no attention to weather. There are many days on which the rain falls incessantly during the twenty-four hours, but there are also many in which the fall is light and intermittent, unaccompanied by wind; and it is never too cold for comfort. Reckless exposure, and the almost universal custom of wearing rubber boots does, in some instances, produce lung and throat affections and rheumatism, but they are comparatively infrequent. North of the Columbia and lower waters of the Cowlitz, there is little or no malaria from swamps and marshes, and such epidemics as arise from time to time, are to be attributed to the neglect of sanitary precautions, which is a peculiar feature of American towns and settlements.

Western Washington finds its synonym in the Puget Sound country. It includes the Puget Sound basin, the valley of the Chehalis, the basin of Shoalwater Bay, and the country drained by the Lower Columbia and its northern tributaries; the principal of which is the Cowlitz. Puget Sound is a deep inland sea, extending nearly 200 square miles from the ocean, and having a surface of about 2,000 square miles, and a shore line of about 1,594 miles, indented with numerous bays, harbours, and inlets, each with its peculiar name, and contains numerous islands, inhabited by farmers, lumbermen, fishermen, and those engaged in quarrying lime and building stone.

The beauty and safety of these waters are remarkable. Not a shoal exists within the Straits of Juan de Fuca, Admiralty Inlet, or Hood's Canal that can in any way interrupt navigation.



Distances of the shore line of the Straits of Juan de Fuca, Admiralty Inlet, Puget Sound, Hood's Canal, etc.:

(1) Straits of Juan de Fuca, from Cape Flattery to Pt. Partridge—

	Miles.
Pt. Wilson ... ..	161

(2) Rosario Straits, Canal de Haro, Gulf of Georgia, etc.—

East Side Whidby's Island ... ..	79
West Side Whidby's Island ... ..	
Pt. Partridge to Deception Pass ... ..	14
M'Donough's Island ... ..	14
Main Shore, Pt. Gardiner to 49th parallel ...	128.5
Fidalgo Island ... ..	53
Allan's and Barrow's Islands ... ..	7.5
Gueme's Island ... ..	16.5
Cypress, Sinclair, Vendovia, and Jack's Islands...	26
Lumni and Eliza Islands ... ..	25
Lopez Island ... ..	34
Decatur Island ... ..	11
James' Island... ..	4.5
Blakely Island ... ..	9.5
Frost Island ... ..	1.5
San Juan Island ... ..	40.0
Shaw's Island ... ..	13
Obstruction Island ... ..	2.7
Orcas Island ... ..	57
Jones' Island ... ..	3.8
Henry Island ... ..	5.8
Speeden Island ... ..	5.7
John's Island ... ..	4
Stuart Island ... ..	6
Waldon Island ... ..	8.5
Various small Islands ... ..	26

(3) Admiralty Inlet commencing at line Pt. Partridge, Pt. Wilson to Puget Sound—

	Miles.
Pt. Defiance to Possession Sound ... ..	67·5
Possession Sound to Pt. Partridge ... ..	34·5
Blake Island ... ..	4
Gig Harbour to Foulweather Bluff ... ..	102·0
Bainbridge Island ... ..	31·0
Port Ludlow to Pt. Wilson ... ..	48·0
Vashon Island ... ..	47

(4) Puget Sound commencing at line joining Pt. Defiance and Gig Harbour—embracing all South—

	Miles.
Main Shore, East Side, Pt. Defiance to Olympia	49·0
Main Shore, West Side, Gig Harbour to Olympia	168·0
Day's Island ... ..	1·3
Hope Island ... ..	1·3
Island ... ..	10·5
Horrow Island ... ..	3
Stretch ... ..	4
Anderson ... ..	15·5
M'Neil ... ..	10·4
Kitson ... ..	3
Fox Island ... ..	11·5
Allshons Island ... ..	2·5
	<hr/>
	280

(5) Hood's Canal ... ..	192
Total shore line ... ..	1,594 miles.

#### BAYS AND HARBOURS.

Neah Bay just outside Cape Flattery. Anchorage is good, but no protection from north-west winds. East of Cape Flattery 25 miles, is Callam Bay. Port Angeles, farther east, lies opposite Victoria, B.C. Good harbour when in, but hard to leave without wind tide and

favourable circumstances. Port Townsend, U.S. Custom Station and port of entry, is a good bay, good anchorage, six miles long and three miles wide. Ports Ludlow, Madison, Gamble, Blakey, Dwamish or Elliot's Bay, are small ports the sites of large saw-mills.

Seattle is the principal trading port of the Sound, and next comes Tacoma on Commencement Bay. Bellingham Bay, on the east side, is shallow for a considerable distance out from the shore, but a fair harbour.

There is no U.S. land, easily accessible or desirable for agricultural purposes, unentered, adjacent to the surrounding shores of Puget Sound. The interior of the country is exceedingly rough, heavily timbered, and what roads there are, very rough and in the rainy season almost impassable. All available lands on the various islands have long been occupied or owned. On the Lumni and Nooksack Rivers flowing into Bellingham Bay, in the N.W. corner of Washington, there is much excellent agricultural and grazing lands. The town of Whatcove, on the river of that name, situated three miles from Bellingham Bay, has, in conjunction with all other towns of any pretensions, and many without, indulged in what is called "a boom," a curious Americanism for real estate excitement. It is close to the British line, and has a fine water-power. The lumber resources of Whatcove country are great. The mineral deposits are iron and coal, the latter not of a very good quality, and gold has been found on the headwaters of the Nooksack, but not in paying quantities.

One third their area under cultivation will range from 40 to 60 dollars per acre. Grasses of all kinds, peas, hops, roots, oats, and vegetables of nearly all kinds,

yield abundantly, and there are excellent markets on this coast owing to the rapid settlement of the country. It is a little too far north on the coast for wheat.

The Snohomish River empties into the Sound abreast of the south end of Whidby's Island. Eighteen miles from its mouth it divides into two confluent streams: the north, called the Skywamish, and the south, the Snoqualuire. On this river and its confluent there is a large quantity of very rich land. The Skagit River empties into the Sound near Fidalgo Island. (Lecouver is the county seat of Skagit County.) It is navigable for 80 miles from its mouths, of which there are several, forming a delta. There is a large body of exceedingly rich land on this river; oats yield 100 bushels to the acre on the tide flats and delta lands reclaimed. These lands are subject to overflow, and precautions must be taken or serious loss may ensue.

The Snohomish and Snoqualuire Rivers are navigable for steamers of light draught, to within a few miles of the falls on the latter river. Beyond the falls are several rich prairies of considerable extent.

The Dwamish River, with its two principal confluent, the White and Green Rivers, has much valuable land in its valleys; it flows into Elliott's Bay, on which is situated the city of Seattle (King's County).

The White River is of historic importance from being the head quarters of a band of Indians, in the war of 1855-56. On October 28th, 1855, the whole settlement was destroyed, and eleven persons horribly butchered. The Dwamish and White Rivers are navigable for 30 miles, and the tide extends up 14 miles.

Resources of King's County are mainly coal (the best south of Vancouver Island), and lumber.

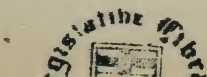
Seattle is a thriving city, and the view from the heights of the Olympic or Coast Range is magnificent.

The Puyallup River, forming the valley of that name, rises north of Mount Rainier. After receiving the Stuck River it empties into Commencement Bay. This is the great hop-raising region of Washington, and the land, of which there is a considerable quantity in the valleys of these two rivers, is of good quality, and much of it of the richest kind, being alluvial deposit. It is worth 100 dols. per acre, when cultivated, and the supply does not nearly meet the demand. There is also considerable prairie land in the vicinity. These lands yield heavy crops of hops, wheat, barley, oats; and roots and vegetables grow to enormous size.

The city of Tacoma, on Commencement Bay, is the great rival of Seattle, and the capital of Pierce Country. The surrounding country is gravelly, and of little value for the farmer.

The Snohomish empties into the elbow of Hood's Canal, 28 miles north of Olympia. The valley of this river varies from one to three miles in width, and contains a great quantity of very rich land. The following yield is well attested; potatoes, 600 bushels; wheat, 40 bushels; peas, 60 bushels; oats, 70 bushels; timothy hay, 5 tons per acre.

In the valleys of the Dungeness and Elwha, there are some fine agricultural lands. These streams rise in the Coast Range, and empty into the Straits of Fuca. Passing down the coast from Cape Flattery, 28 miles, the mouth of the Quillehute River is reached. It varies





in width from 50 to 200 yards, and gives the name to a variety of salmon as yet not found in any other locality. They are short, thick, and fat, and of delicious flavour. The Indians, whose tribal name is ascribed to this river, are noted in the early history of this coast for their hostility and barbarity to the whites.

The bottom lands are extensive, and well adapted to agriculture; but the Indian population, although now reduced to order, is an objectionable feature, and the rainfall is excessive, especially at Cape Flattery. Going south, Gray's Harbour, and the valley watered by the Chehalis and its tributaries, is one of the fertile regions of Western Washington. Great activity in the development of this district is now being displayed. The harbour is said to be equal to that of Boston, and is 15 miles north and south in greatest width, with an area of about 150 square miles. The bay is surrounded by mud flats, bare at low water. The valley of the Chehalis varies in width from 15 to 50 miles. From the mouth of the Satsop River through to Hood's Canal, closed in by the Black Hills and the Coast Range, is a beautiful open valley, 14 or 15 miles wide. Following the Chehalis Valley to Chehalis, the capital of Lewis County, the garden of the State is traversed. Land is rich and very productive, and high in price. The tide-flat lands along the coast, and mouths of various streams, are very productive of grass, and used for dairy farms. It is too damp and misty for grain. In the Chehalis Valley, a crop of wheat of 50 bushels per acre was grown on land that had raised 25 crops; and this without any assistance to the soil beyond five years' summer fallowing. Land of this quality, however, called

“beaver dam,” or “alluvial” deposit of great depth, is limited and worth from 100 dollars per acre, and is now being purchased for hop yards. The country, bounded on the south by the Chehalis and its tributaries, on the north by Olympia and Tacoma, and extending on both sides of the Northern Pacific Railroad to Centralia, nearly all of a gravelly formation, supporting a scant herbage and, excepting on the banks of small streams, where there are strips of alluvial soil, is comparatively worthless for cultivation. It is, however, a very pretty country.

Shoalwater Bay is one of the best harbours north of San Francisco, and receives several rivers, the principal being the Palux, Nasal, and Willopah. The bay is full of shoals and flats, and at low tide half its area is bare; good but narrow channels run throughout its extent. The valley of the Willopah, one of the oldest settlements in the country, contains a considerable body of rich bottom land of a clayey nature, very productive of grass. The Cowlitz River rises in the Cascade Mountains, between Mounts Rainier and St. Helens, runs west, then south, and empties into the Columbia, about 50 miles from its mouth. It runs the whole length of Cowlitz County and nearly the whole breadth of Lewis, through good agricultural land, both prairie and bottom. At the headwaters of this river and its several tributaries, chief of which is the Tilton, is a comparatively recently-formed Colony of Americans. It is about 70 miles from stations on the Northern Pacific Railroad.

The pick of the Government land is secured, but there is land left in this region, most of which is unsurveyed. There have been some rough characters living in this

remote settlement, and considerable trouble may be experienced by the settler, not of their own order.

Toledo, the head of steamboat navigation on the Cowlitz, about 50 miles from its mouth in the Columbia River, is on the edge of the Cowlitz prairie; a body of some few thousand acres. This is an old settlement, and was the site of the old Red River settlement of Canadian French, introduced in 1842, under the auspices of the Hudson's Bay Company.

A little north of the upper waters of the Cowlitz, is the Newaukum River. Its course is north and west, and it empties into the Chehalis River, near the town of that name. It has two branches, uniting a little north of the Newaukum prairie, a small opening in the forest.

Ranging north, parallel with the Portland and Tacoma branch of the Northern Pacific Railroad, there are several small streams; and then the Des Chutes River, which empties into Budds Inlet, the extreme head of Puget Sound, about two miles from Olympia. Next, the Nisqually River, which rises south of Mount Rainier. There are prairies in this vicinity called the Nisqually Plains, and at its mouth is Fort Nisqually, an old Hudson's Bay post.

The whole country comprised within the boundaries of the Columbia in the south, the British line on the north, the Cascade Mountains in the east, and the Pacific Ocean and Puget Sound on the west, is, with the exceptions of clearings and the small prairies mentioned, a vast forest of, in some cases, gigantic timber; with a dense undergrowth. The roads are exceedingly rough in the timber, and very muddy in the wet season, and late in the spring. The timber is very valuable where facility of transportation is obtained; and there is a large area of

land which will, one day, be available for cultivation. The expense of clearing, however, is so great that attention has only been devoted to the "bottom lands." A great portion of this region, back from the settlements and ranging along the foot hills of the Cascades, is unsurveyed. The best portions, valuable for agriculture and timber, have long been secured by saw-mill companies and speculators, at a very low price.

Uncultivated land can be bought from 10 to 20 dollars per acre ; or, by going far back in a rough country, some pieces of desirable Government land may be found ; but it is fast being taken up, as railways will soon intersect this region. The methods of clearing pursued are as follows :—In the case of bottom lands covered with a small undergrowth of vine, maple, and alder, with no large timber, the brush is cut with a hook, like a bill-hook on a handle ; this is laid in rows systematically (June and July is the best time) ; and, when dry, set on fire. On the ashes, when the autumn rains are at hand, timothy grass seed is sown, and next year a good crop of grass can be cut with a scythe, the stumps of the cut undergrowth remaining about eight inches high. The cost of this "slashing," as it is called, is about five dollars per acre, unless there are any larger sized trees to be dealt with. In some instances the hay made will pay for the "slashing." The piece of land thus treated, and fenced, is either "grubbed," roots dug and pulled out with oxen, or used for pasture until they rot and can be easily pulled out ; which occurs in two or three years. If done by contract, the cost of cutting, burning, and grubbing, will range from 12 to 20 dols. per acre, on land of this description. On bottom land covered b

heavy timber as well as brush, the latter is treated as before mentioned, and the timber cut down; and, if it cannot be sold for lumber, burnt. The largest trees can be readily burnt, and divided into lengths, by boring two auger holes at right angles, and dropping some lighted coals of green vine maple into the vertical hole. Cedar is cut into rails and other material, for use. The huge stumps are usually left in, and grass seed is sown as before, or they can be blasted with dynamite. The expense of this method is great, according to their size and the time taken; it will vary from 30 dols. to 100 dols. per acre. In most cases it is cheaper to purchase land already cleared, than to attempt clearing heavily timbered land, unless for the purpose of selling the timber. The process of blowing up giant trees and stumps is as follows:—A hole is made under the main roots of the stump with a crow-bar, and into this is first put half a cartridge of dynamite (No. 2), with a short fuse attached. The explosion of this makes a cavity for the main charge, well under the base of the tree. This chamber is charged with five or six pounds of Judson powder—more or less, according to the size of the tree—in a linen bag, into which is inserted a cartridge of dynamite with a long fuze. The charge is placed well under the tree, and thoroughly tamped, and the hole filled up. When exploded, the whole tree and the stump will be lifted and shattered; and it is afterwards burnt.

There is a great variety of game in Washington, viz.: Grizzly bear (scarce), cinnamon bear, brown bear (the Alaskan variety), black bear, congar (*Felis cocolor*), wapiti (*cervus canadensis*), black-tailed deer, mule deer (*cervus macrotis*), hybrid deer (*cervus illeheus*)—a cross



between the black-tailed and mule deer, not classed—mountain goat and caribou (scarce). There are three varieties of wolves: black, grey, and the small prairie wolf (coyote). Prairie fox, grey fox, red fox, fisher, martin, beaver, ermine, sea otter, muskrat, and skunk are the small fur-bearing animals.

Of small game the following varieties exist:—Dusky grouse, sooty grouse, Richardson's grouse, Franklin's grouse, gray-ruffed grouse, Oregon-ruffed grouse, sharp-tailed grouse, sage cock, American quail (introduced), mountain quail, Californian (crested) quail (introduced), Mongolian pheasant (introduced), whistling swan, trumpeter swan, ducks and geese in great variety, and the Wilson snipe.

The most important varieties of fish are salmon, trout, halibut, herring, rock cod, smelts, and black cod (taken off Cape Flattery in limited numbers). Salmon abound everywhere, but are fished for only with net and spear. They can, however, be taken with bait in the harbours and in the rivers. Trout are of two kinds, the brook and the sea trout, which follow and precede the annual runs of salmon. They take the fly freely when not feeding on salmon roe, with which they are caught in great numbers. They range from half to two pounds weight usually.

Smelt in immense numbers run up the large rivers above tideway, in April, and can be taken up in small dip-nets. At Shoalwater Bay, and along the coast, there are numbers of flat fish (flounders of good quality), crabs, clams, and oysters, which are, however, very small, though of good flavour. There are many other varieties of fish along the coast.

The best rivers for trout fishing are the Cowlitz and its tributaries (upper waters); Newaukum, and tributaries of Chehalis; White River and Black River, its tributary; and various streams and lakes in Whatcove County. For shooting, the head waters of the Cowlitz and the foot-hills of cascades are the best regions.

Living is, at least, 25 per cent. cheaper than in the Eastern States; and in house-keeping the expenses of the table need not exceed about two dollars per head for adults, or about nine shillings per week.

Cereals of all kinds (except maize), grasses (except alfalfa), fruits (except peaches and melons), vegetables, and roots can be raised in abundance. Hops of the finest quality are produced. The climate is, as shown, excellent; and frosts, owing to their being dissolved by the mists of the morning before the sun takes effect, seldom, if ever, do any damage. There has never been an entire failure of crops in the memory of the oldest settler.

The scenery along the coast of Puget Sound is grand, and also views of the Cascades from various openings in the timber, and from the larger valleys.

The rainy season is trying to people not used to it; and it is impossible to go anywhere in the brush without waterproof clothing, or drive or ride on the roads without being covered with mud; but people who have been subjected to the blizzards and low temperatures of the east, are taking to all these drawbacks very kindly. The country is fast filling up with a good class of people from the east, and there are some fair schools at Tacoma and Olympia.

## CENTRAL AND EASTERN WASHINGTON.

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CENTRAL WASHINGTON.—The climate is dry, bracing, and healthy. The rainfall is scanty, and in many parts insufficient for agricultural purposes. There is a great variation between the temperature at sunrise and mid-day. A fire during the nights of summer, or early in the morning, would be comfortable in many parts. Occasionally there is a severe winter and heavy snowfall; but the warm wind from the "Japanese" current, called the "Chinook," comes to the rescue, and rapidly dissolves it.

There are, however, winters in which a large number of stock has perished from want of provision. From a reliable source the following temperatures are given:— Walla-Walla, latitude,  $46^{\circ} 03'$ ; altitude, 1,396 feet; spring,  $51^{\circ} 9'$ ; summer,  $73^{\circ} 1'$ ; autumn,  $53^{\circ} 6'$ ; winter,  $34^{\circ} 1'$ ; year,  $53^{\circ} 2'$  (mean). Dalles, latitude,  $45^{\circ} 36'$ ; altitude, 300 feet; spring,  $53^{\circ}$ ; summer,  $70^{\circ} 4'$ ; autumn,  $52^{\circ} 2'$ ; winter,  $35^{\circ} 6'$ ; year,  $52^{\circ} 8'$ . Lapwai, Clearwater Valley, latitude,  $46^{\circ} 27'$ ; altitude, 1,000 feet; spring,  $51^{\circ}$ ; summer,  $70^{\circ} 3'$ ; autumn,  $51^{\circ} 2'$ ; winter,  $36^{\circ} 9'$ ; year,  $52^{\circ} 4'$ . Of these the mean represents the climate of the great plains, and of the valleys connected with it up to latitude  $49^{\circ}$ .

The Yakima River rises in the vicinity of the passes of the Cascade Mountains, latitude,  $47^{\circ} 15'$ , from several large and beautiful lakes; course, S.E., 160 miles, to its confluence with the Columbia, in latitude  $48^{\circ} 05'$ . For 25 miles down the river the valley is from one-half to a mile wide; it then widens out into the Ketelas Plain, 10 or 15 miles wide; the river there being about 90 feet wide, three deep, and very rapid.

On the several tributaries of the Yakima, especially on its upper waters, and in the valley of Yakima itself, there is much rich land. There is some desert and sage brush land. Some portion of this part is wooded, but it is 70 miles up the main Yakima before you reach building pine; but, when the Pisuonee or Wenachee is reached, the wooded region extends to the Columbia. All this region is included in Yakima County, *viz.*, valleys of Moxa, Kounowoch, Alitanum, Natches, Cooweetchie, Wenas, and Selah.

Irrigation is necessary, except in some low bottom

lands ; rain and snowfall is very light, but the latter is sometimes very heavy. All the best part is taken up and settled.

The Dalles, a narrow place in the Columbia River, where the channel has been worn out of the rocks, is about 10 miles above the mouth of the Klikitat River. This valley furnishes the route of communication with the main Yakima Valley, course generally north ; and contains some good farming land. There is a nice settlement on the Klikitat Prairie, but this is a rough country, more suitable for stock.

Goldendale is the capital of Klikitat County. The Methow River rises, by several sources, in the mountains north-west of Fort Okanagan, and, running southerly, empties into the Columbia ; latitude 48°. On its upper part there is a fine wide valley, but this narrows to a mile 10 miles above its mouth. Choice situations all owned.

The Okanagan, rising in a long series of lakes north of the 49th parallel, runs nearly south 70 miles within the State, and joins the Columbia eight miles above the Methow. It expands into several marshy lakes on its course, and is generally slow and deep. Its valley is fine and hills well grassed, wooded, and arable. Irrigation is required, and all the best portions secured. Above the forks of this river the country is very gravelly and poor.

The Chelan River empties 17 miles below the mouth of the Methow River. Three miles up from its source the Chelan Lake is reached. This lake is about 33 miles long, and heads in the main chain of the Cascades, near the head waters of the Methow. There is very little



land suitable for cultivation, and it requires irrigation. Good stock country, but occupied.

"Eastern Washington" is divided from Western Washington by the Columbia River, which bounds it on the west. The climate is excellent, dry, and bracing; and, while the temperature falls considerably below zero during the winters, and there are often heavy snow-falls, the winter season is short, and subject to the influence of the "Chinook" wind. That portion of the eastern division approaching and bordering the British line is subject to summer frosts, and heavier snow-falls. During the summer there are days on which the temperature will rise to  $100^{\circ}$ , or even more in the valley of the Columbia; but the nights are cool, and there is nearly always a breeze, and no sense of lassitude is ever experienced from it. At the town of Walla-Walla (population 3000), and in other towns on the Columbia River, there is "malaria" in the dry season, in the autumn usually, producing ague and bilious fever. There are very high winds in this region—the warm, or "Chinook," wind will in a few hours evaporate a heavy fall of snow; but at other times considerable annoyance is often experienced from dust, and the operations in the hay fields impeded by their violence. There are no blizzards or violent storms—exceptional.

The Colville Valley derives its name from the Hudson's Bay Company's fort of that name, near the bank of the Columbia, in lat.  $48^{\circ} 37'$ . In the immediate vicinity of the fort the soil is sandy. Colville Valley, 50 miles long and three wide, has a large quantity of good land, as usual, settled, owned, or held by speculators. There are

fine streams and timber handy. Gold has been found in all this region.

A fine valley lies along the Slawtehus for 35 miles, varying from one to three miles in width. The soil of this valley is generally good. It is boggy and marshy in places, and a good deal of it under water in the winter time; and these wet places are particularly valuable for hay land in the summer, and already secured.

Following up this valley, and down that of the Chemakane, at a distance of about 58 miles from Fort Colville, the Spokane River is reached. The Spokane empties into the Columbia just below the 48th parallel. Spokane Falls—the name of the city on this river—has a splendid water power, and is destined to be one of the most important cities in the State. It is in the centre of a fine wheat country, and the rich mining districts of Cœur d'Alene. The Spokane plateau embraces all the country included within the limits of the Cœur d'Alene Mountains, the Saplin, Columbia, and Spokane Rivers. It has an undulating stratum of basalt, which is covered with deposits of earth, sand, and gravel. Nearly the whole of this district is unfit for cultivation.

The valleys of the Spokane and Cœur d'Alene are, in places, well adapted for settlement, and well supplied with wood and water.

The valley of the Walla-Walla, or Nez Percé, is of surpassing fertility. A peculiarity of the innumerable streams that flow into the Walla-Walla River is that they spread themselves in almost every direction—not only in channels, but over and on top of the surface, constituting an admirable system of self-distributing natural irrigants. To this feature the valley owes much

for its remarkable fertility and producing power. The main streams are skirted by alder, cottonwood, and willow, the only wood. Distant a few miles, however, the Blue Mountains are covered with heavy timber. This is an old settlement, and land and farms are high in price.

Whitman County is bounded on the north by Spokane County, on the east by the eastern boundary of the State, and on the south by the Snake River. It contains an area of 1900 square miles. General character of the county is heavy, rolling land, free from timber. There are still some unoccupied and cheap lands in this county, but they will soon be taken. In the neighbourhoods of Colfax (the county seat), Endicott, and especially Farmington, some fine lands are to be found, but must be purchased of railroad companies or private parties. This is a fine grazing country, and eagerly sought after.

Assolin County is bounded on the north and east by the Quake River; and on the south by the south boundary of the State. It has an area of 600 square miles, of which about one-third is mountainous, and two-thirds rolling agricultural lands. It is a comparatively new section, without railways, but will soon have them. There is an opportunity at present to secure cheap land.

Douglass County, bounded on the south and west by the Columbia River, and on the east by Lincoln and Adams Counties, contains about 4,000 square miles. This is a bunch-grass stock country, subject to summer frosts, and deep snow in winter. A very fine stock range, but requires ample provision for winter. Lincoln County, on the west of Douglass, contains about 2,200,

square miles. This forms the principal portion of the Big Bend Country. The Northern Pacific Railroad passes through the south-east corner of it. Sprague, the county seat, is a town of 1,500 inhabitants. There are vacant Government lands here, and lots of railroad lands, from 3 dols. 50 c. to 6 dols. per acre. No timber, and scarcity of water, requiring very deep wells. Much of the land is of very poor quality, and it is a desolate and unattractive region.

Kittitas County, Ellensburg, is the capital, on the Northern Pacific Railway. Irrigation necessary. Of an area of 3,000 square miles, not one-sixth is fit for general farming, and of that most is of very poor quality. Iron, coal, and gold deposits in the mountains. The valley of the Kittitas contains what good land there is.

Stephen's County occupies the whole of the northern part of Eastern Washington, and contains 15,000 square miles. The Okanogan, or Salmon River district, contains mineral deposits of gold and silver. This is a rough, but fine stock country in summer, but on the more elevated portions there are heavy snows, and there are also summer frosts.

Columbia County, Dayton the capital. There is some fine land under cultivation here, and good transportation facilities by the Snake River steamers, and Oregon River and Navigation Company's Railroad. Returning to the Walla-Walla district, Mill Creek, on which this town is situated, must be noticed. This creek spreads itself out laterally, watering an extensive surface, and then converging into one channel, empties into the Walla-Walla River. The valleys of all these rivers and creeks, which

is an American name for a brook or stream considered less than a river, contain very rich land. Also the table-lands and surrounding hills consist of good soil, yielding abundant pasturage. A great number of cool springs burst out of the sides of the hills, some of them of considerable volume, sufficient for water powers. The Snake River, having formed the east boundary of the State of Washington from the 46th parallel to the mouth of the Clearwater, crosses the entire width of Eastern Washington, and flows into the Columbia, nine miles north of the mouth of the Walla-Walla. The Cœur d'Alene River empties into the Spokane, and has some fine agricultural and grazing land. Its source, the Cœur d'Alene Lake, is a splendid sheet of water, about thirty miles in length, and from two to ten in width. This lake is full of trout, some of immense size; one, two, and three pounders being common. Nine pounds is the heaviest reported as caught with hook and line, but fish of immense size have been seen. The trout are of many varieties, from the Pacific Coast *salmo-frontinalis* to the large salmon trout. In the warm season, the trout frequent the mouths of the cold mountain streams running into the lake, and immense catches could be made, but the use of brutal methods of destruction, such as dynamite, &c., is rapidly decreasing the number of fish in all waters easily accessible by settlers. On the Kooskooskia and Palous Rivers, there is some fine land; and such is the climate in some of these valleys, that the grass has been found perfectly green, peas up, and flowers in blossom in December. Several of the tributaries flowing into the lake afford fine land.

The Cœur d'Alene Mountains are a mass of limestone,



and most of the valleys on its western slope contain good land ; and the entire region east of the Columbia affords good pasturage. The excitement attending the development of the rich silver mines of the Cœur d'Alene district, has long ago caused all available agricultural lands in this part of the State to be secured. The lowlands of Western Washington, and the Cascade Mountains, arrest almost all the precipitation in the form of rain and snow ; the fall of the latter being very heavy in the Cascades. Central and Eastern Washington are very sparingly supplied with rain, and irrigation is required on all table and bench lands. On the rich alluvial lands, already alluded to, especially where there is a natural irrigation produced by spreading streams, or from the storage of moisture in the deep soil, artificial irrigation is not necessary. In the district noted as the "Great Bend," wheat has been grown with little or no rain, but farming will not be successful until some means of irrigation be found. It is so dry that oats are grown for hay, as grass, such as timothy, cannot be raised. The Northern Pacific Railroad has an immense body of land throughout this part of Washington. The best of it is sold, much of it is worthless, and of the rest, without irrigation it will not yield a crop, except in a very exceptional year. North of lat. 49°, except on the coast, the rainfall may be said to be *nil*. As a stock country the whole of the State is good. All through the densely timbered western section, cattle and horses find good feed, principally on the succulent shoots of the vine-maple, thimble-berry (a variety of raspberry) and other shrubs ; and with provision for a month or six weeks will get along well

in limited numbers. The open grazing country in the central and eastern portions has been overstocked, and the difficulty of providing hay is great in the more northern part. Douglass County is a fine bunch-grass region, but all hay lands are taken up.

In the month of January, 1890, a snow-storm of unprecedented severity occurred in Eastern Washington and Oregon. Reports from the Colville Reservation, in the former, state that cattle are dying by hundreds from starvation; the snow being over two feet deep on a level, with immense drifts. One cattle owner has lost 2000, and others estimate that they will lose half their stock. In Wyoming, Colorado, and New Mexico great mortality amongst sheep and cattle is reported. It will thus be seen that the profits of years can be swept away by one unusually severe winter. As regards Washington and Oregon, the snow will soon be removed by the warm wind, but it has already lasted long enough to starve stock unprovided with food. Government land offices are situated at Olympia and Tacoma, for the western division, and at North Yakima, Walla-Walla and Spokane Falls for the eastern division of Washington. The best and most economical way to inspect the country, and to select land, is to purchase a waggon and horses, with a general camp outfit. In event of a settlement being made the team will be required, and if not, where judgment is used in the purchase, little will be lost in the sale, and less than travelling expenses otherwise would be. The expenses of an outfit for this purpose will be about as follows—

					Dols.
Waggon (farm), 2 $\frac{3}{4}$ in axle	...	...	...	...	85.00
2 Horses	...	...	...	...	250.00

	Dols.
Harness ... ..	30·00
Tent ... ..	25·00
Axes and cooking utensils ... ..	10·00
Hobbles for horses, lined inside (Portland prices) 1 dol. 25 c. per pair, ... ..	2·50
Provision for two men, per month, ... ..	16·00
Sundries ... ..	10·00
<hr/>	
Dols. 428·50	

With this outfit the prospecters can proceed to any portion of the Pacific Coast by the well-travelled roads they will find, excepting the coast region of Oregon and Washington, in which more difficulty will be experienced in getting about. If the journey be commenced in April, sufficient grass will be obtained for the horses, which can be hobbled and turned loose to graze.

The principal game to be found in Eastern Washington are: deer, bear, panther, ruffed and sharp-tailed grouse, the sage-grouse, and a variety of ducks and geese on the lakes and streams in the spring and autumn. The game is much the same in Central Washington, excepting sage, and sharp-tailed grouse, and substituting the willow-grouse. East of the Cascades the true cinnamon bear is found, and west, the brown, the Alaskan, and the black bear. Hounds are generally used for hunting deer and bears, and dogs to bark and "tree" the ruffed-grouse, which is often shot with a rifle. There is good hunting on the upper waters of the Okanagan and Methow Rivers, and especially on that of the Skagit River, which is, however, a very rough country, and can only be entered by pack animals.

At Chelan Lake there used to be good hunting, but the large game is scarce now. The ruffed-grouse is plentiful, and the lake is full of large trout, which are, however, not of very good flavour. Salmon and trout run up the Columbia and its tributaries, and nearly all mountain streams are full of fish, except in the vicinity of mining camps.

In Western Washington the California (crested) quail is getting very numerous. They are difficult to bag, for they run before the dogs, and get up out of range. The mountain quail is found in the foot-hills of the Cascades, and the American quail has been introduced on Whidby Island. There is some excellent hunting on the head waters of the Cowlitz, and on other streams heading in the Cascades. Ducks and geese abound on the bays and estuaries in the winter; but are fishy in flavour, requiring skinning and parboiling to be eatable.

The State of Washington is the finest hop region in the States, and much attention has been given to this industry of late years.

Fortunes have been made by hop-raising, but the business has been rather overdone, and the prices lately obtained are not satisfactory. The valleys of the Chehalis, Cowlitz, and all other streams having alluvial soil, are admirably suited for hop culture. Two thousand pounds to the acre of a fine quality can be raised, and at a cost of about eight cents per lb., against that of 12 cents in New York State. The market price has varied from 15 cents to 1 dol. per lb.

Where failures have occurred, they have been principally in consequence of inexperience and general bad management, in picking and curing.

Farm labourers' wages vary from 15 dols. per month, with board, by the year, to 20 dols. One dollar a day, with board, or 1 dol. 50c., without, for short engagements, or more in harvest time. Servant girls called "helps," 3 dols. to 5 dols. per week, with board; the latter rate, only in cities. Hop-pickers 1 dol. per box. The cost of hiring a buggy and two horses is 5 dols. per day; saddle horses, 1 dol.; boarding for a horse, 75 cents per day. House rents from ten to thirty dollars for ordinary frame houses, per month. "Routes" to Washington are, for the western division, Canadian Pacific to Seattle, or Tacoma; northern, Pacific to Seattle, Tacoma; the Cowlitz and Chehalis Valleys (*via* "Portland and Tacoma division"), Toledo; on Cowlitz, *via* steamboat from Portland. Steamboats run to all parts of the Sound from Vancouver, B.C., Seattle, Tacoma and Olympia. Routes for eastern and central divisions: Spokane Falls, Walla-Walla, Sprague, Ellensburgh, for Okanagan district; Yakima, Farmington, Palous and Cœur d'Alene districts (*via* Wallula), by the Northern Pacific. Also, Union Pacific, *via* Portland, for the western, and Wallula for the eastern divisions of Washington.

The best towns or cities for out-fitting are, for Western Washington, Portland, Tacoma, and Seattle; and Chehalis, for Chehalis district. For the eastern and central divisions: Spokane Falls, Walla-Walla, Farmington, Sprague, Ellensburgh, and Yakima. There is a Government road from Fort Steilacoom to Wallula, in Walla-Walla County, *via* Nachess Pass of the Cascades. For the benefit of those who may wish to travel this way, the following distances are given as a guide to



halting places. It must be stated, however, that west of the Cascades, this is impassable in winter:—

	Miles.	Miles.
To Puyallup River, - - -	22 $\frac{1}{2}$	22 $\frac{1}{2}$
First crossing White River, - -	9 $\frac{1}{4}$	31 $\frac{3}{4}$
Last Prairie on White River, - -	6 $\frac{1}{4}$	38
Second crossing, „ - -	11 $\frac{7}{8}$	49 $\frac{7}{8}$
Sixth crossing, „ - -	5 $\frac{5}{8}$	55 $\frac{1}{2}$
La Tête, - - -	3 $\frac{3}{4}$	59 $\frac{1}{4}$
First crossing Green River, - -	1 $\frac{7}{8}$	61 $\frac{1}{8}$
Bare Prairie, - - -	2 $\frac{3}{8}$	63 $\frac{1}{2}$
Last crossing of Green River, at western base of mountain, - - -	10 $\frac{1}{4}$	73 $\frac{3}{4}$
First Prairie on summit, - - -	3 $\frac{3}{8}$	77 $\frac{1}{8}$
Last Prairie on summit, - - -	2 $\frac{1}{8}$	79 $\frac{1}{4}$
First crossing of Naches River, - -	5 $\frac{1}{2}$	84 $\frac{3}{4}$
Crossing of Papattsally, - - -	10 $\frac{1}{2}$	95 $\frac{1}{4}$
Mouth of Bumping, - - -	4 $\frac{1}{4}$	99 $\frac{1}{2}$
Last crossing of Naches River, - -	11 $\frac{3}{4}$	41 $\frac{1}{4}$
Wenass River, - - -	10	121 $\frac{1}{4}$
Where road leaves Wenass Valley, - -	16	137 $\frac{1}{4}$
First crossing of Yakima River, - -	4	141 $\frac{1}{4}$
First water after „ - -	18 $\frac{3}{4}$	159 $\frac{1}{2}$
Second „ „ - -	7 $\frac{1}{2}$	167
Brackish Spring, - - -	16 $\frac{3}{4}$	183 $\frac{3}{4}$
Great Bend of Yakima River, - -	18 $\frac{1}{4}$	202
Near mouth of Yakima River, - -	15 $\frac{1}{4}$	217 $\frac{1}{4}$
Terminus of route, - - -	17 $\frac{1}{4}$	234 $\frac{1}{2}$

From Toledo, on the Cowlitz River, to Olympia or Tacoma, it is about 57 miles. From Walla-Walla, 30 miles from Wallula, roads diverge in all directions; Walla-Walla to Fisherville, British Columbia, 417 miles; from Tacoma to Ellensburgh, about 150 miles; from Tacoma to Lake Chelan, about 200 miles. Distances on the Columbia River are:—From the Cascades to Great

Dalles, 50 miles; Dalles to Priests' Rapids, 185 miles; Priests' Rapids to Colville, 100 miles; Fort Colville into British Columbia (by steamer), 250 miles; Ellensburg to Spokane Falls, 280 miles.

Farmers on the Pacific Coast are now complaining of the difficulty of obtaining labour at a reasonable price. The Chinese having to a great extent been driven off the North Pacific, the few that remain have, in imitation of white labourers, increased their rates for work; and timbered land, that at one time they would have contracted to clear for 25 dols. an acre, they now ask more than double the amount for, and firewood, formerly cut at 80 cents a cord, they now demand 1 dol. 50 c. for. The "Chinese Exclusion Act" has been inimical to the interests of farmers, fruit growers, and other industries throughout the Pacific Coast. The treatment of these inoffensive, industrious people has been disgraceful to the country; and although the law was invoked for their protection, it did not, nor does it now, protect them from secret intimidation. At Tacoma, the ringleaders of the cowardly outrages perpetrated, were arrested and put under "bonds" to appear for trial, seemingly for "form's sake," as they were not brought to trial. Thousands of acres of forest and brush-land now under cultivation would be in their primitive condition but for the Chinese, for they do a class of work, such as grubbing brush, which is tiresome, that white men cannot easily be got to do. In the construction of railroads they have been of the greatest assistance to the country. As domestic servants they have been of great service. A manufacturer, asked why he employed Chinese instead of white men, replied, that he had tried both, and found

that his white employees were always grumbling and getting drunk, whereas the Chinamen were sober, industrious, and reliable. In the fruit regions (especially in California), their services are necessary, and complaints have been made of serious embarrassment in consequence of a diminished supply of labour. In the hop-fields of Washington they are now dependent on the "Indians" for picking; and after driving out the Chinamen, on the "professed principle" of not wanting to employ "alien" labour, they applied for Indians from British Columbia to assist them.

The persecutors of the Chinese are, for the most part, composed of the lowest class of the population, but they use their voting power to influence others, and a candidate for office must "trim his sails" accordingly, and newspapers make up violent editorial denunciations of the evils of Chinese labour, to suit the palates of their subscribers.

It was noticed that after the Pacific division of the Canadian Pacific was completed, and the men paid off, drunkenness and rioting ensued amongst the white labourers as usual, but the Chinamen dispersed in a sober and orderly way. It is difficult for a Chinaman to get justice in any way in the Courts, and in the small "County Courts" it not infrequently happens that decisions, in other cases, are outrageously at variance with the evidence, as the following incident will show. The defendants in this suit had contracted with a saw-mill proprietor for a quantity of lumber of a certain grade. A portion of this was of inferior quality, and the defendants, aliens, refused to receive it, and suit was then brought for the amount before a "Justice of the Peace."

The case occurred in a small town in "Washington Territory," and the defendants retained as counsel the "Probate Judge" of the county. The Court was held in a small school-room, and this was the only case for trial at the time. On the opening of the "Court," the defendants' counsel informed the Justice that he had been up late the night before and was not prepared for the case and begged time to look over his brief, which was granted, the audience in the meantime amusing themselves by chewing tobacco and whittling the benches. It afterwards appeared that the defendants' counsel was seen drunk at a saloon about 12 p.m. the previous night. The defendants' principal witnesses were two carpenters of undoubted respectability, while those of the plaintiff were some men who had "*never seen*" the rejected lumber. The defendants' counsel having arranged his papers, proceedings commenced. The plaintiff's witnesses were heard without interruption and subjected only to a cross-examination tending to strengthen the argument for the plaintiff; but the witnesses for the defendants, whose testimony was clear and emphatic, that the lumber in question was not up to contract, were subjected to continual objections, which were sustained by the Court. The arguments on both sides ended, the defendants' counsel prepared himself for a "mock" supreme effort in the cause of his clients. He first carefully removed his coat and folded it up, and advanced close to the Justice with raised arm and clenched fist, flourished sometimes within a foot of the former's nose. The Justice with a smile that was "child-like and bland," listened to an argument by turns pseudo-pathetic, and as the roaring of a bull, accom-

panied by a violent flourish of the fist. The farce ended by the Justice giving a decision in favour of the plaintiff, with costs. The defendants' witnesses, two old settlers and most respectable farmers, remarked to them, "We knew how this case would go before we had been five minutes in Court." "How could you know?" "Oh! the plaintiff is not worth a cent the law can get hold of, and there are already lots of judgments out against him. He would not pay the costs if he lost the case, and the only chance the Court has of getting its costs, is to give a verdict against you."

The only remedy for these outrages is an appeal to a District Court presided over by a Judge of known probity. The gross injustice which often marks the rulings of "Justices of the Peace," who, mostly ignorant and sometimes unprincipled men, seek the office for what they can make out of it, is the greatest drawback to a residence in the country. An amusing story is told by Judge ——. The District Court being in session in a town in Washington, the hotels were crowded, and next to the Judge's room, separated only by a thin wall, was one occupied by two men, the one an ex-Judge from Arkansas, and the other an Englishman. The ex-Judge was loquacious, and the Englishman reticent and somewhat grumpy. After enumerating many of the great advantages the Englishman would enjoy in this country, the Judge said, "I guess it would be a long time before you would have the honour of sleeping in the same bed with a Judge in your country." "Yes," said his companion, "but it would be a d— long time before they would make such a man as you a 'Judge' in my country!"



## OREGON.

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THIS State, bounded on the north by Washington, on the east by Idaho Territory, on the west by the Pacific Ocean, and on the south by Nevada and California, contains an area of 94,560 square miles. Traversed by the Cascade, Coast, and Blue Mountains, and watered by the tributaries of the Columbia, the Willamette River, and numerous other fine streams, it presents many varieties of soil, climate, and scenery.

There are many English and Scotch settlers, and property can be acquired without taking the iron-clad oath of allegiance. Population, 250,000. The coast region of Oregon ranges the entire length of the State, about 275 miles. It is a narrow strip of very rough, mountainous and broken country, running north and south, and bounded on the east by the Coast Range Mountains. It comprises the counties of Clatsop, Tillamook, western portions of Benton, Lane, and Douglass, Coss, and Curry. The climate of this coast region is particularly healthy, and there is no malaria. Its mean temperature is wonderfully even, not varying more than about  $10^{\circ}$  to  $15^{\circ}$  the entire year; and water everywhere is abundant and very pure. There is not a day in the hottest portion of summer unpleasantly warm, while the nights are always cool and the sea breeze refreshing and invigorating. The numerous streams and rivers are swarming with trout and salmon; and the soil in the valleys is rich and most productive. Cereals, with the exception of oats and barley, do not flourish along the coast, but vegetables and roots—excepting those requiring warm nights—grasses and small fruits of the harder varieties grow abundantly.

The Coast Range Mountains, of no great altitude, may be said to consist of a series of high lands running at right angles with the shore; with valleys and rivers, between the numerous spurs, having the same general direction as the highlands. They present a curious appearance in some places, such as a series of flattened cones and peaked hills, and the timber, being mostly killed by forest fires, presents a bleached appearance. A great deal of the dead timber has fallen, and what

with the dense growth of the vine-maple, thimble-berry, and other shrubs, and the trunks and roots of the fallen timber, it is very difficult to get about. Cattle roam all through this region and do well, feeding on the vine-maple and thimble-berry principally. Ferns grow to an immense height, and are difficult to get rid of in cultivation. A great deal of this dead timber, preserved by the charring process, is available for the settler's use, and cedar is not subject to decay.

Unfortunately, the amount of land available for cultivation in this coast district is very limited, and confined to the valleys of rivers and the tide-flats in the vicinity of various small harbours; and every bit of it is occupied or owned, and in many cases illegally held for speculation by persons who could not finally establish a claim at the United States Land Office. Notwithstanding its difficulty of access in many places, its bad roads, often impassable in winter, its comparative remoteness from markets, every little valley having a few acres only, has been eagerly sought for. Three or four tons of hay can be raised on an acre, and with an unlimited run for his cattle, which require very little feed during winter, and butter rated as the best in the State, the settler does very well. Bees are another great source of income, and as they feed a great deal on white clover, which grows abundantly, the honey is delicious. At Astoria near the mouth of the Columbia River, the rainfall is about 70 inches, but going south it rapidly diminishes, until, at a distance of 90 miles or less, it would not be more than at Portland. Although so damp and rainy a climate in winter, catarrhal and pulmonary affections are rarely met with, and then either in consequence of

reckless exposure, or in such persons as have come there with them.

Starting from Clatsop County—ranging south—the most desirable valleys are the Nehalem, extending up into Columbia County and dividing Clatsop from Tillamook, Tillamook, and Nestucca Valleys, in Tillamook County; Yaquina Bay and valley of Yaquina River; Alsea Bay—the two latter in Benton County;—Sinslaw Valley, in Lane County; Umpqua Valley, in Douglass County; the bay and valley of Coos River, in Coos County; and the Rogue River Valley, in Curry County. Tillamook and Nestucca Valleys can be reached by steamer from Portland to the former; rail and stage from North Yamhill, and Sheridan, (in summer) to the latter. Yaquina Bay is reached by rail from Portland, and steamer from San Francisco, which touches at other points south.

Dairy farms can be bought from 30 dollars per acre, according to improvements. There is a considerable area of Government land, so far rejected by land-seekers as being unfit for cultivation and too expensive to clear, which is capable of being formed into fine pasture-land; and in the Eastern States, especially in Pennsylvania, there are thousands of farms made on land not half as good. Crops never fail in this section, and back from the sea-coast fruit of all kinds can be grown in the more southern part of it. At Coos Bay there is an extensive colliery, and in Coos and Curry Counties some fine timber, including myrtle. The average winter temperature of this part of the coast is  $46^{\circ}$ ; the last month of spring is  $49^{\circ} 7'$ ; and the first of winter  $48^{\circ} 2'$ . The course of the Cascade Mountains—called the Sierra

Nevada in California—through the State is generally parallel with shore of the Pacific, and distant therefrom an average of 110 miles. Between this and the Coast Range lies the Willamette Valley; "Oregon's pride," a magnificent body of farming land 200 miles long by 20 or 30 miles wide. The Willamette River is navigable during high water as far as Eugene City, in Lane County. This valley, in common with all this region of the Pacific Coast, belongs to the tertiary period. Shells and ligneous petrifications are numerous, and mammal fossils have been found in various places. The soil of Western Oregon consists of—(1) a brown clay loam of good quality, thinly timbered with oak, producing good grass, found chiefly along the spurs of mountains, or extended ranges of hills, never in the level prairie. (2) A dark or black porous soil formed by the admixture of vegetable mould with the clay loam just described. This soil occurs only in the valleys close by, or between the mountains, and is very productive. (3) A grayish, calcareous sandy loam of very fine quality, covered with a turf of grass, adapted to the cultivation of cereals, especially wheat, oats, and barley. This class embraces five-sixths of the entire valley, including most of the prairie and some of the oak timber land. It is little effected by drought, and, though not naturally porous, is pulverised with facility and is mellow. (4) A strictly alluvial soil on the immediate banks of the river and its large tributaries, composed of sand, vegetable matter, and decomposed earths. This land is overflowed in very high water, but not during the growing season, and is of practically inexhaustible fertility. The first and second classes of soil do not stand drought well. The estimates of the yield per



acre for various cereals are as follows—wheat, 24 to 36 bushels; rye, 20 bushels; barley, 26 to 28 bushels; oats, 40 to 65 bushels; potatoes, 125 to 200 bushels; timothy grass, 2 to 4 tons per acre. Vegetables of all kinds, and fruits (with exception of those kinds requiring warm nights) are produced abundantly, and there is often a supply far exceeding the demand. Under the Donation Act of 1852 large tracts of land were acquired by settlers, as much as 640 acres by married, and 320 acres by single men. In most cases the farmers were unable to properly cultivate half their land, and the same exhausting system was pursued that has been before mentioned; with the result that a large number of farms in the Willamette and other valleys are now in a state of depletion. The aggregate overproduction of wheat, and consequent low prices, added to the seriously impaired productive power of their land, has brought them into debt. At least 50 per cent. of these farms are mortgaged, many of them hopelessly, and their former owners are struggling along raising such grain as they can for the benefit of their landlords, the mortgagees. At the eleventh hour efforts were made to restore the exhausted fertility of these lands by copying the methods pursued in the old countries, such as pasturing sheep on their winter wheat and summer following. Throughout the Willamette Valley farms can now be bought from 15 to 25 dols. per acre, nearly all ploughed land, with all buildings, and in some cases the farming implements, which, however, after the superior management of the average American farmer, are not worth carrying off. On the Willamette River and along its tributaries the fertility of the soil is comparatively unimpaired, but on farms on the uplands,

and along the foot-hills of the coast on the west, and Cascade Mountains on the east, land that has had 20 crops of wheat taken off it, and nothing done to assist the soil, it must be a matter of time to restore its productiveness. Thousands upon thousands of tons of straw have been burnt, and still this plan is adopted to get rid of what the superior intellect of the American farmer tells him is useless and unnecessary as the land is *too fat*, and it is too much trouble to make manure of it; and as he has a contempt for books and theoretical agriculture, he would not know how to make good manure of it if he tried. The production of fruit is so great that only that of a superior quality is remunerative to the grower. As fruit trees require to be properly pruned and cultivated to obtain a superior quality of fruit, it follows that much produced in Oregon is of inferior quality. The climate and soil is everything that could be desired, and only the "knack" the American farmer has of being foremost in everything, which wont give him time to attend to his fruit trees, leads to his disappointment. There are thousands of acres of land suitable for fruit-raising and general farming to be bought at reasonable prices, but land of the fourth class will command at least 100 dollars per acre, and is in demand for hop-raising. On the foot-hills and mountains there is much Government land left; but it is rough and the timber of no great value, and the soil of inferior quality. Land on which valuable timber is found is generally secured by speculators. The open grazing lands have been so extensively pastured, especially by sheep, that the feed is now very scanty.

Besides the Willamette, the principal other valleys

are the Umpqua, in Douglass County, of which Roseburgh is the chief town—and the Rogue River Valley. The Umpqua Valley is a beautiful country, and contains about 1,000,000 acres. It is principally rolling or hilly land, the face of the country being in many places rugged and picturesque. It is well supplied with good soil, good timber, and good water. The valley is separated from that of the Willamette by the Calapooya Mountains, a heavily timbered belt, with an altitude of 5000 ft., and extending from the Cascade to the Coast Range. The Umpqua River is navigable for 25 miles by small craft.

The Rogue River Valley occupies the extreme southern portion of Western Oregon, extending into California. It is a broken country, or a series of valleys and rolling highlands separated in some places by dense forests of fir and cedar, and in others thinly timbered with oak, affording pasturage. The river is not navigable. The Rogue River district includes more than the strip of country constituting the valley of that river. Spurs from the Siskiyou Mountains to the south, the Cascades to the east, and the Umpquas, on the north, traverse the country in all directions, and the many tributaries of the Rogue River drain valleys of considerable area, some of them nearly 50 miles long. The valley of Bear Creek, a stream rising in the Siskiyou Mountains near the California line, flows into the Rogue River about 50 miles to the north. The valley is about 40 miles long, and 12 miles wide, and is bounded by the spurs of the Siskiyou and Cascade Mountains, ranging north-west and south-east. It is a very pretty valley, well cultivated. Ashland Creek rises on Ashland Butte, a snow peak with an

altitude of about 8000 feet, and enters Bear Creek 30 miles above its mouth. A short distance from its junction the town of Ashland is situated (population, about 3000). It is a station on the California and Oregon line, and has doubled its population within two years. The town is built on an elevation of 2000 feet above the sea level, and enjoys a fine climate, corresponding to that of similar elevations in the district. The mean annual temperature (records of United States Signal Service) is 50° Fahr. The average mean temperature for January, the coldest month in the year, is 38°, and for July, the hottest month, 79°. The average annual rainfall is 23 inches. The greatest precipitation for one month being, in November, eight inches. No violent storms occur, and the temperature seldom falls below 10°, and snow, to the depth of a few inches, remains on the ground only a short time. There is a cool breeze in the afternoons and evenings of the hottest days in summer. The town is well laid out, and is a pleasant place of residence, having good water and one good hotel, and the surrounding country is very picturesque; and within 60 miles of the celebrated Crater Lake, a body of water of unfathomable depth, is an old crater in the Cascade Range. A semi-weekly stage runs from here to Sinkville, in Klamath County. This is the finest fruit-growing region in Oregon. All fruits not requiring a tropical climate can be grown here, including the English walnut, and peaches are of particularly fine flavour. All cereals, including maize and sorghum, flourish in the valleys. Of fruit, 20 dollars worth of peaches, at one cent per lb., are said to have been taken from one tree eight years old; and 30 dollars worth of apples (at

same rate) from one tree. From a peach orchard of 1000 trees, 3 years old, a net profit of 100 dols. per acre has been realised, and this fruit is superior to any grown on the Pacific Coast. Land is expensive in the Ashland district, being 100 dols. and more, for choice fruit land, and 150 dols. or more, for land under cultivation, per acre. There are a number of small, partially cultivated farms, at a distance from Ashland in various directions, which can be purchased for low prices from people who are in debt, or wish, with the restless spirit of the old poineer, to move on, or enter into mining or other business; but the amount of choice valley land being very limited, it will command a good price anywhere. There are a number of fruit orchards, which, from neglect or ignorance on the part of their owners, are not remunerative, but it is certain that fruit culture here will, with good management, pay as well (if not better) as on any part of the Pacific Coast, and the climate is far preferable, as the meteorological records will show. There is, also, within a radius of a reasonable distance, the advantage of enjoying some good sport in the way of shooting and fishing.

There is much valuable timber in the country; pine, fir, cedar, and oak, which is, however, of little value on this coast. The mineral resources are gold, coal, iron, cinnabar, marble, limestone, and granite. Since 1852, the gold taken out amounts to 25,000,000 dols., but at present the amount found is not much. The rainfall is principally in winter and early spring, and there are months of dry weather in summer, in which crops will suffer on any but special soils, and the use of irrigation would be a great benefit.



In some seasons Bear Creek dries up above its confluence with Ashland Creek, and water gets very low in wells, and other streams. There is no Government land worth entering, but on the edges of valleys land can be purchased at three to ten dollars per acre. There are water powers in this district, and a woollen mill and other machinery is driven by this means at Ashland.

During the summer months the pasturage in the valleys dries up—except meadows; and it is very dusty, and in the southern counties the temperature is often 100° or more in the middle of the day, but it is not oppressive, especially in situations exposed to the daily sea breeze. The Coast Range arrests a considerable portion of the precipitation, and lands of classes 1 and 2 will be likely to suffer from drought. On the Willamette River and its large tributaries and creeks, and in the neighbourhood of any sluggish or stagnant waters, malaria is found in the form of intermittent and bilious fevers. It is particularly bad in the neighbourhood of Salem. Also in the southern counties under similar conditions ague will be troublesome, especially during autumn or protracted droughts. By getting on the uplands, or in the higher valleys with swift, clear streams, this can be avoided. Oregon is an excellent country for sheep, but it has been overstocked and reliance placed on the open pasturage, which was soon eaten out. Overcrowding in tainted yards, and general neglect of sanitary precautions, has resulted in scab and a degenerated breed. Fortunately, however, intelligent men are now engaged in farming and managing stock, whose example will be followed. With her fine climates and great natural resources, there must be a

great future for Oregon when agricultural operations are conducted on proper principles.

The timber belt of Oregon is situated in the Cascades, and extends the whole length of the State. All along the foothills small valleys will be found, affording excellent situations for small fruit farms. The pure and delightful breeze from the Pacific tempers the heat of the sun, and with pure water and freedom from malaria, life should be enjoyable. People who have experienced the terrible weather of the Central and Eastern States, willingly submit to the loss of some pleasant attributes of their lives in their old homes. The principal market for produce is Portland, from which it is again distributed to various points on the Puget Sound and Eastern Washington. The prices obtained by the farmer are not by any means always satisfactory. The middlemen (commission merchants), and railroad companies, especially, when there is no competition, absorb the lion's share of the proceeds. The American farmer is bled on every side, but he is used to it; and this country is so ruled by monopolists and syndicates, and breeds of one kind and another, that it is difficult to see a way of relief for him. If he can make 6 per cent. on his investment, and a comfortable plain living, he should be satisfied; but unless he is an intelligent manager and a man of judgment, he will certainly not do that. Here, as in Washington, the rain and mud in the winter is trying, and the dust is also in summer; but nothing like California. There is no dust in Western Washington, but they take it out in mud. You will often grumble and growl about the state of the roads and the rain, but every week or so you will read in your paper an account of the terrible

blizzards in the East; and in the words of a modern American poet, whose name, however, is not generally known, you will

“ Get down on your knees in the ‘ mus,’  
And thank the Lord it aint no ‘ wus.’ ”

There are no summer storms to damage anything. Yaquina Bay, about 180 miles from Portland by rail, is a delightful summer resort, and chiefly to be noted as being the Pacific terminus of the Oregon Pacific Road, now pushing through the Cascades to cross Eastern Oregon, and aside with the Union Pacific at Boise City, Idaho. The harbour at Yaquina is said to be the best on the coast, south of the Columbia, but it is not at present deep enough for large vessels drawing over 16 feet. The Oregon Pacific Company, owning nearly all the town side, propose making this port a rival to Portland, by shipping the cereals to be hereafter raised in Eastern Oregon, and such as they can direct from the Willamette Valley from this port, when the harbour is made deep enough. At the rooms of the “ Board of Immigration ” at Portland some information may be obtained of use to the stranger.

There are great attractions for the tourist and sportsman in Oregon; for there is both fine scenery, when not obscured by smoke from fires, or mist (during the early part of summer is the best time), and there is good shooting and fishing everywhere. Large game must be sought in the Cascades, and there are a few deer in the Coast Mountains, and some bears. Dogs must be used, and the ground to be gone over is very rough. There are ruffed grouse and California quail; and they will be

found in August round the wheat fields, along the edge of the timber, and later in the woods. The Mongolian pheasant has been introduced and is multiplying rapidly. Ducks are abundant on the Columbia and in the lakes. Trout are found everywhere, and salmon wherever they can get up stream in the tributaries of the large rivers. Some of the best rivers for fishing are the "Nehalem," the Trask, in Tillamook, and the Rogue River, in Douglass County. In the two former rivers fish run to four lbs. in weight; in the latter both large trout and salmon, from 10 to 15 lbs. weight, can be taken with the fly. It is a very rapid river and requires strong tackle. This river is the only place known where salmon take the fly. Take the California J. Oregon Road from Portland and get out at "Goldhill Station," with camp, outfit, and a barrel of salt to cure the fish, if you are good with tackle. July is the best season. At the falls of the Willamette near Oregon city, in latter end of April and May, when the salmon are running, fish from 10 to 40 lbs. can be taken with spoon-bait, and lots of them. For large game, take any of the emigrant roads crossing the Cascades into Eastern Oregon. When in the foothills secure the services of an old hunter.

In all the valleys south of the Willamette much of the choicest alluvial soil is under cultivation and valued at 100 dollars per acre. Good land uncultivated can be purchased at from 10 to 20 dollars per acre. There are thousands of acres of land of good quality, but covered with brush or timber which can be bought cheap, when the timber is of no great value, but the expenses of clearing are an obstacle to the profits of such an investment at present.

There are, however, areas of brush land which can be converted into pasture by slashing and burning, and then putting Angora goats into the enclosure, which, by constantly nipping the shoots, prevent any new growth; and the profits of the increase of the herd, and the mohair, set against the expense of bringing it into cultivation. The adoption of irrigation in the south portion of the State would be advisable, on certain classes of soil especially.

Eastern Oregon commences east of the Cascades, extends to California, on the south, Idaho, on the east, and Washington, on the north. The climate is quite different from that of the western division. It is dry, and bracing, and except on occasional years, never very cold; mercury seldom going below zero, and the spring is fine, early and open. The snow-falls, sometimes deep, are removed by the "Chinook" wind. The country is subject to high winds, summer and winter; and dust is very troublesome in some parts, and the winds often bleak in winter. There is an insufficiency of rain for agricultural purposes, and irrigation is required, except in a few places to be hereafter mentioned. There are several large lakes and numerous rivers, but none navigable except the Snake and the Columbia. Between the Cascade and the Rocky Mountain chains the country is composed of immense plateaux, interspersed with numerous unconnected mountain ridges of recent volcanic origin. Some of these are covered with immense forests, while others are merely sterile masses of trappean rocks, piled together in rugged heaps by the elevatory force of internal fires. By some of these elevations, and by spurs projecting from the two main ranges, the broad table lands, as before mentioned, are



divided into three distinct valleys or basins, namely :— The Utah basin, centring at Great Salt Lake, but having many undulations, forming geographic centres, to which its rivers flow and disappear in the sandy plains, or discharge their currents into island lakes. This basin has no outlet to the sea. The Klamath basin, north-west of Utah (drained by the Klamath River), emptying into the Pacific Ocean, and the Des Chutes River, emptying into the Columbia. The Columbia basin includes all that portion of Oregon lying east of the Cascades, and known as Eastern Oregon ; except the small portion occupied by the Klamath, a part of which is in California, and another small portion of the Utah basin lying mostly in Utah Territory. The geological structure of the Cascade range is of the same general character as that of the Rocky Mountains, but there is less of stratified rocks, and stronger indications of recent volcanic action are observed. Basaltic and granitic rocks constitute the geological basis of the country. Slate and other argillaceous rocks, and a sort of irreducible limestone also characterise the western slope of the Continent. The metamorphic features become more marked the nearer we approach the Pacific, until arriving at the Cascade range, this characteristic is plainly seen. Certain differences between the soil and vegetation on the east, and those on the west side of this second volcano axis of the country, may be explained by atmospheric or meteorological peculiarities ; so that the upheaval of this ridge, notwithstanding those differences, was probably contemporaneous with that of the Rocky Mountains. But it is certain the Cascade range has undergone more recent convulsions, and of the numerous vents along the

summit line, some might be classed as active volcanoes. Slight shocks of earthquake have at periods been felt on the North Pacific slope, but not nearly so severe as those experienced in California.

Soon after entering Oregon's southern boundary, the Cascade range throws off a branch called the Blue Mountains, which extends north-eastwardly through the State, passing into Washington and Idaho. A party of explorers from the "Princeton University" have recently made some very interesting discoveries in Eastern Oregon. Between the Blue Mountains and the Cascades the country is reported to be a great volcanic plateau, made up of lava sheets piled one on top of the other; indicating ancient volcanic outbursts on a stupendous scale. Through this mass of lava streams have cut deep valleys, some broad, and others deep, gloomy canons. This entire district was in a former geological age the bed of a great fresh-water lake, into which streams brought masses of sand and mud, and volcanoes showered ashes. Animals, which were swept into the lake in times of flood, became covered with silt, and as the latter in course of ages consolidated into rock, the bones of the victims were gradually petrified. This rock is now slowly disintegrating by atmospheric action, and these bones are exposed to view in some places on the sides of canyons. From the remains found, it seems that animals were of a much smaller size, and of a different description to those of the present day, and the climate is supposed to have been warmer than at present. Great areas of this region are covered with sage brush, and enormous bands of sheep roam over it. The grass has been utterly destroyed, leaving the

country quite bare in places, and where the pasturage is trodden out by large herds of sheep, it is estimated that it would take 12 years for its restoration, in the ordinary course of nature. There are thousands of acres of fertile soil in this country, only requiring irrigation to make them very productive, and vegetables and fruit grown here have proved of very superior quality and flavour. The Oregon Pacific Railway will open this country. So far, the whole of Eastern Oregon has been mostly given up to stock-men, who try to keep people out by saying the country is fit for nothing else. Wherever irrigation has been tried, however, on suitable land, it has been successful, and alfalfa will yield abundantly.

Klamath County, on the southern boundary of the State, has an area of about 5,400 square miles. This county is without any transportation facilities, supplies having to be hauled over the mountains from Ashland, a station on the Oregon and California road.

There is a considerable quantity of land, which, with irrigation, will be very productive, but so far it is used for a stock range, and it is overstocked. Some extraordinary crops are reported from this county, with irrigation, or raised on land naturally irrigated. The Klamath is a magnificent lake and a peculiar one, inasmuch as it has "no water in it." It is a broad savannah, sometimes covered with a thin sheet of water for a brief period. There is some good country round Goose Lake, Lake Abert, and some others of considerable size in the northern part of the Utah Basin. The country is picturesque and enticing to the sportsman. The bunch grass (*festuca*) of the immense grazing lands of Eastern

Oregon and Washington grows in large tufts, and is not bound together by their fibrous roots as with most other grasses. It grows from 6 to 18 inches high, and is very nutritious, and when the dry season commences it cures into a hay, and retains much of its nutritive properties. It was considered inexhaustible, but, in common with all other wild grasses, it will not stand continual cropping, and its place must be taken by cultivated grasses, or re-seeded. The valleys of the Des Chutes and its tributaries, contain some very rich land, and large crops have been produced. The valley of the John Day River is of equal fertility. It is about 30 miles east of the Des Chutes, both rivers running north into the Columbia. Powder River runs through the largest valley in Eastern Oregon, and contains some excellent soil. Burnt River runs through a very rough region, with little land of any value for cultivation, but it is well timbered, with good grass. East of Burnt River the land is comparatively worthless, and impregnated with alkali.

The "Grande Ronde," a few leagues north of Powder River, is an enchanting valley. The first view of it from the Oregon short line of the Union Pacific Railroad, approaching from the east, will delight the beholder. It is about 20 or 30 miles in length, situated in the midst of the Blue Mountains, whose foothills are clad to their summits in verdure, with blooming orchards and verdant meadows; its sight is most refreshing after hours of journeying over dusty, sage-brush plains. Here is observed a similar natural irrigation to that described at Walla-Walla. The water from mountain streams spreads itself over the western side of the valley, making

it very fruitful. On the eastern side the land is not quite so good, and there are seasons in which difficulty is experienced in growing crops, from lack of rain. Where there is no naturally moist soil, or some kind of natural irrigation, there is not rain enough in any of these valleys. Lovely as the Grande Ronde is, there are some serious drawbacks. The winds in winter, rushing through gaps in the mountains, sweep with great fury through the valley, sometimes with heavy snowstorms. Its proximity to the mountains, and its altitude, result in sudden changes of temperature, producing neuralgic and rheumatic affections. Mountain fever, a remitting fever of malarial origin, also occurs at certain seasons. Although the winters are short, the mercury falls much below zero at times, and fruit is liable to be nipped by frost in the spring. A great deal of hay is grown, and it is the centre of a very extensive and fine stock country. Land can be bought at from 12 to 30 dollars per acre. Wallowa County, bounded on the east by the Snake River, has been settled in the past few years. It is a very rough, mountainous country, good for stock most of the year, but the snow is very deep in the winter, and it is colder owing to its elevation. The valleys along the Snake River are excellent wintering places for stock, but over-crowded, and there is much trouble between sheep and cattle-men all through this country, and sheep have been poisoned as they spoil the range for cattle. Baker City, in the county of that name, and a mining centre, is a good market for the Grande Ronde particularly. Baker and part of Malheur County were splendid sheep ranges; but now many of the hills and mountains are absolutely bare, and there



is no room for more herds. In Umatilla County there is a fine range, and enormous bands of horses have been raised there. It is an excellent climate, and grain can be raised without irrigation; and it is a very fine fruit country, and, the elevation being much less, stock winter on very little feed, some winters without any. Riding and driving is attended with pleasure in all Eastern Oregon, for there is little mud and good roads, and the scenery is charming. It must be understood that there is no choice Government land left in Eastern Oregon except the Umatilla Reservation be opened. Land, or farms and ranches must be bought. On the plateaux before mentioned, there are lots of land for entry, but useless without irrigation.

In the Wallowa Lake is a peculiar fish, a variety of salmon which has been called the red-fish, or red-trout. Mr. Messenger of Walla-Walla—a keen sportsman and close observer—gives some interesting information about this fish. The red-fish, or red-trout, is anadromous, and ascends to the lake by the Wallowa River in large numbers in the spring. The peculiar, deep, red colour for which the fish is noted is only assumed during the spawning season. At other times the fish is of a bright silver colour, and is probably the fish known as the "Mukletio salmon" in Puget Sound. When the fish first arrive at the lake they look slender, but soon become very broad and deep, growing constantly in depth, but not much in length. The head of the fish becomes changed and the nose hooked. They have no teeth on arrival, but shortly after these make their appearance, and as they also shed their scales about the same time, their appearance is entirely changed in the course of

about two weeks. The average weight of the male is from five to six pounds, that of the female from four to five pounds. They have been caught as large as ten pounds occasionally. Although the fish do not appear to feed on anything while in the lake, they will sometimes take a hook if baited with their own eggs, which are of a deep-red colour, and one-third smaller than those of the *salmo guinnat*. The males are very quarrelsome on the spawning bed, and are continually fighting. The principal spawning grounds of these fish are about the mouths of the small tributaries of the lake, and also along the shallow, gravelly shores of the lake itself; which is about four miles long and about a mile and a half wide. In some places it is known to be 325 feet deep, and there are undoubtedly deeper spots than these. The fish commence running into the lake in the first half of July, and the run continues throughout August. After spawning they leave the lake and probably return to the sea in September. Many die, however, annually, while in the lake, from injuries received during the run up, or from exhaustion, and large numbers used to be destroyed by bears, which are very partial to, and expert in catching them. The bears, however, have been caught in their turn by the settlers. One year 25,000 pounds of these fish were taken in nets and sold for 10 to 15 cents per lb.

Besides these fish there are in this lake numbers of large trout, weighing from four to six pounds, and also what is called the "bull trout," a slender, handsome fish with pink spots, caught as heavy as 9 lbs. Wallowa Lake is easy of access, and the climate there during the summer and late into the autumn is delightful. There

is still some fair hunting to be had in this district. The game is much the same as before described. There is some good duck and snipe shooting in the Grande Ronde Valley, and ruffed grouse in the timber, and lots of small trout in the mountain streams, and salmon come up the river in the season. Good hunting will be found in Willowa County. In Klamath County (in the mountains) there are some bands of "Wapiti" deer (called elk) and there is some very good hunting ground here; there being no railroad communication. An exciting scene was recently witnessed by some hunters in the "Linkville" district. A band of wapiti accompanied by a fawn and headed by a "Monarch of the Glen," was discovered in a small valley, and the hunters were preparing to shoot, when suddenly some large, grey wolves dashed out from the bush and pulled down the fawn. The band of wapiti at once went to the rescue, and forming a cordon round the wolves, presented their formidable antlers to the foe. The wolves, with savage yells, sprang again and again at the wapiti, only to be hurled back mangled and bleeding. Closer and closer pressed the wapiti, presenting an impenetrable *chevaux-de-frise* with their antlers, till at length the wolves were left dead on the ground, only one mangled animal having strength to crawl off. Unfortunately, the hunters had approached so close during the conflict that they easily despatched several of the wapiti, which should have been spared after their noble defence. While touching on the subject of hunting, something should be said of the frequent charges brought against English sportsmen, particularly, of wantonly butchering game, by American newspapers. Some few instances may have occurred,

but very few, and the game has been destroyed by American skin-hunters. Tons of buffalo-robcs were sold for as low as a dollar each, and the carcasses left on the plains. Deer and wapiti were surrounded in deep snow and slaughtered for their skins. Prairie grouse and quail were trapped, and the former have been thrown to the hogs in former times in Illinois, where they used to be abundant. Rather late in the day "associations of sportsmen," in various parts of the country, are doing their best to put a stop to all this, and enforce the game laws, which, however, cannot easily be done in many places, for those law-abiding citizens who wish to give information of violations of the law dare not, for fear of the revenge of those informed against. The term "sportsman" is in this country mostly applied to the horse-racing and gambling fraternity, and that of "hunter" refers to those who use the rifle and shot-gun.

At Portland there is a Game Preservation Society, and there are a number of true sportsmen. Here is published the best newspaper on the Pacific Coast, the *Oregonian*, which bravely maintained the rights of the Chinese during their persecution, and it may be said, greatly to the credit of the State of Oregon, that every attempt at outrage was suppressed.

The prices of provisions at Portland are as low as in the east, and in many cases lower. Clothing also is as cheap although brought from the east. Building material of all kinds is reasonable in price, and the cost of living less than it would be in the eastern States. A small cottage of lumber and plastered can be built for 350 dollars. A small house of seven small rooms, 900 dollars. In the first case about 5,000 feet of lumber and

8,000 shingles would be required ; in the latter, 12,000 feet of lumber and 10,000 shingles. The price of lumber ranges from 12 to 25 dollars per 1000 feet, and shingles three to four dollars per 1000. The variation of these prices, in the different parts of the country, will not make a great difference in the cost of this portion of the material for houses of this size and of very plain finish and such as are commonly built on a farm by persons of moderate means. In giving a contract to a builder, a stranger will be likely to be imposed upon if not very careful, and his house will be unsatisfactory and costly for its quality.

Good horses for farm work range from 100 to 200 dollars each. Half-bred ponies and light driving horses 50 to 100 dollars. Ordinary cows (with calf) 40 to 50 dollars. Sheep 2 dols. 50 c. to 4 dollars. Stock cattle, 20 to 30 dollars. There are a number of breeders and importers of thorough-bred stock in Oregon, and much improvement is being made in the grade of stock throughout the Pacific Coast. Ordinary poultry sells at 2 dols. 50 c. to 4 dollars per dozen for chickens and hens. Ducks 5 to 6 dollars per dozen. Turkeys 12 cents per lb. ; eggs 12 to 25 cents per dozen. Wheat is usually from 65 to 80 cents per bushel, and oats from 25 to 40 cents per bushel ; hay 5 to 12 dollars per ton ; fat cattle 5 cents per lb. (gross) ; sheep 4 cents per lb. (gross) ; flour 4 dollars per 100 lbs ; waggon, farm, 80 to 100 dollars ; harness, double, 35 dollars ; vehicles 75 to 300 dollars ; driving harness 40 to 60 dollars (double set) ; plain furniture 40 to 100 dollars per set. Farms can be rented for 2 dollars per acre, and in some cases for one-third of the crop.



# CALIFORNIA.

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THIS immense State extends along the Pacific Coast 750 miles, with an average breadth of 230. Its area is 120,947,840 acres, of which about 89,000,000 acres are estimated as suited for some kinds of agricultural industry. In the basin of the Sacramento and San Joaquin Rivers there are about 14,000,000 acres of arable land, 16,000,000 in the coast valleys, and the remainder in the "Colorado Desert," Owens River valley, and the Klamath basin. The area of lakes, bays, and mountains is estimated at 14,000,000 acres.

### *The Climate of California.*

There are two climates; the inland and the coast. The temperature of the water in the ocean is very even, standing at 52° to 45° all the year round. From April to October a steady, cool, moist wind from the north prevails. It is always cool and pleasant both summer and winter. The inland climate may be subdivided into the climate in the valleys, and that of the foothills of the mountains and the highlands. In the summer, in the former, it is exceedingly dry, with an immense depth of dust, which covers the pedestrian or equestrian as with a cloud, and it penetrates everything. During July,

August, and September, the heat is great, often reaching from  $106^{\circ}$  to  $110^{\circ}$  during the middle of the day, and is, in the southern portion of the State especially, quite prostrating, and all who can afford it go to the seaside. This great heat being accompanied by an extremely dry atmosphere, and consequent rapid evaporation, sunstroke does not occur, as it would in many of the Eastern States with a very much lower temperature; and great as the heat is in these valleys, it is much more endurable than  $85^{\circ}$  in the shade in New York or Philadelphia. In all those portions of the valleys surrounding the Bay of San Francisco, and in all others adjacent to the ocean, the moist air from the latter prevents it from being scorched in summer, or frozen in winter. The cold of winter in the interior, even on mountain elevations, is not intense, with the exception of counties in the extreme north of great elevation. The severity of winter is due, not to extreme cold in every part, but to violent and prolonged snowstorms in one section, and cold and prolonged rains in others. The long range of the coast, the slope of which, as far back as the first mountain wall, is under the control of the ocean, has a most uniform climate. The soil is kept moist by daily deposits of mist, and is admirably adapted for dairy purposes, as well as all vegetable growth. The counties bordering on the great bay, Sonoma, Napa, Solano, Contra Costa, Alameda, Santa Clara, and San Mateo have climates modified by the warm, moist air from the Pacific, and have wonderful agricultural resources. The Payaro, and some other valleys further south, are also bathed by the moist winds of the ocean, as also the Sacramento and San Joaquin Valleys, but in a less degree, being further back from the

ocean. The innumerable little valleys ranging along the Sierra Nevada range have deep snow in winter, and are furnaces in the hot part of summer. They are luxuriant in vegetation in spring and summer, and all kinds of fruit are most productive; and the numerous mountain streams afford plenty of irrigating facilities. The southern section, including one-fourth the State, is deficient in rainfall.

*The Climate of San Francisco.*—The mean annual temperature is 56·6, and for that of the coast and bay climate generally, it is the same. A record for 17 years at San Francisco shows the coldest day to have been 25°, and the coldest noon-day 37°. The two hottest days were 97° and 98°; but this is a most exceptionally high temperature. There were but six days in 17 years in which the thermometer was as high on an average as 90°. The first decided rains commence generally in November or December. In January the rains abate, and vegetation advances slowly, with occasional slight frosts. February is like spring, with little rain. March and April are pleasant and showery, with an occasional hot day. In June, when the hot weather sets in, the breeze comes and continues through July and August, occasionally holding up for a day or two, when it is rather warm. In September the sea breeze moderates, and there is some warmish weather which is prolonged into the next month. Pleasant weather continues often into November, or December, when the rains set in. The great scourge of San Francisco is the dust, which is very bad at times, whirling into the eyes at every turning of the street, and generally producing a sense of discomfort. Ladies' dresses suffer much from the effects of

this dust. The winter season is the most pleasant in all respects. Receding from the ocean the days are warmer, and the nights colder, but the mean varies little within the range of the sea breeze, and throughout California the nights are cool and refreshing, with few exceptions. In the south-east corner of the State there is a section having a distinct climate. It is known as the Colorado Desert—barren of vegetation, with little rain. Here is situated Fort Yuma—one of the hottest places on earth. The heat, commencing to be excessive in May, becomes unendurable in June, July, and August, marking from  $116^{\circ}$  to  $120^{\circ}$  in the shade, and about  $90^{\circ}$  at 10 P.M. In this belt of country rain seldom falls; in the distance dark clouds may be seen hanging over the California and Sonoran Mountains, but they seldom visit intermediate localities, and during one whole year only two inches of rain fell. During winter and spring storms of dust and sand sweep over the desert plains, coming principally from the north-west, raising and carrying before them clouds of pulverised sand and dust, which penetrate every crevice, the finest silk not being impervious. In summer these hot winds—like the simoons of the Sahara—sweep over and scorch the land, like the hot blasts of a furnace.

During the rainy season, in California, the rain is not perpetual. In more than half the winter, usually, there is no more than necessary for agriculture, and much pleasant weather is interspersed. In the intervals of rain it is bright, sunny, and calm. At Christmas everything is green almost throughout the State, and in February and March flowers and blossoms are out. The rains are showery, and not often regularly continuous



for many hours, and the sun breaks forth frequently in the midst of a shower, and the sky becomes almost clear. Presently, when it is least expected, the rain is heard on the roof with the suddenness of a shower-bath. The night is more favourable to rain than the day, and no matter how dense the clouds, or how marked the indications of the barometer, the sun frequently breaks the clouds, and the rain is not renewed until night.

The following table exhibits the mean quantity of rain falling at different stations, and the number of years on which the mean is computed. The stations are arranged in the order of their latitude, beginning with Fort Yuma and San Diego, which are about on the same parallel:—

#### MEAN QUANTITY OF RAIN.

Localities,					Term. Years.	Mean. Inches.
Fort Yuma	...	...	...	...	4	3.24
San Diego	...	...	...	...	3	10.43
Monterey	...	...	...	...	4	12.20
Stockton	...	...	...	...	4	15.10
San Francisco	...	...	...	...	17	20.79
Benicia ...	...	...	...	...	8	22.86
Sacramento	...	...	...	...	12	18.23
Placerville	...	...	...	...	1	86
Do.	...	...	...	...	1	26
South Yuba	...	...	...	...	1	109
Do.	...	...	...	...	1	81.56
Red Dog (Nevada County)	...	...	...	...	3	64
Fort Jones	...	...	...	...	3	16.17
Hoop Valley (Klamath County)	...	...	...	...	1	129.15
Port Orford	...	...	...	...	4	71.63
Astoria, Oregon	...	...	...	...	1½	86.35
Dalles, Do.	...	...	...	...	2	14.32
Fort Steilacoom, Washington	...	...	...	...	5	61.75

California, with a range of  $10^{\circ}$  of latitude, has a minimum of  $3\frac{1}{4}$  inches at Yuma, and a maximum of over 100 inches on the Sierras.

The enormous quantity of 129 inches at Hoopa Valley was registered by Dr. Kirkpatrick of the U.S. Army. The rainfall for three months was as follows:—November, 44.10 in.; December, 23.79 in.; January, 30.95 in. On the South Yuba 41.95 in. fell in one month—December. As this enormous mass of water drains into the Sacramento River, it is no wonder terrible inundations sometimes occur. Hoopa Valley is only 40 miles west of Fort Jones, where the annual supply is set down as 16.77 in. only. In the lower portion of the Sacramento, and in other valleys, especially in the Los Angeles district, ague and bilious fevers prevail in the autumn. Dense fogs occur at Los Angeles in the winter, and so much moisture is deposited, that water can be wrung out of the beard, and a person hardly seen across the street.

Mr. Lorin Blodget, with reference to the effect of the climate on pulmonary diseases ("Climatology of the United States," p. 475), says: "Three years at Sacramento, which would represent the average of Upper California quite correctly, gave 113 deaths in a total of 1,251, or 90.03 per 1,000; but," he remarks, "certain it is, however, that few of the cases of consumptive diseases hitherto met with in the valley have originated here. In most, if not in all the instances, the disease has been implanted before reaching the country, and the most that can be said is, that it *has not been benefited by the change*. . . ." It is believed that the cases of all pulmonary affections originating in California will not reach

four per cent. on the number of deaths, and will thus stand at less than one-third of the number of the Eastern States. The yearly mean temperatures for the following stations are: San Francisco,  $56.6^{\circ}$ ; Sacramento,  $58^{\circ}$ ; San Diego,  $62^{\circ}$ ; Port Orford,  $53^{\circ}$ ; Dalles, Oregon,  $53^{\circ}$ ; Fort Steilacoom, Washington,  $51^{\circ}$ .

In Shasta County, in the northern part of the State, there is reported to be 1,500,000 acres of Government land unentered.

The "Dehesia Colony," comprising 1,480 acres, situated three miles from Reading, the capital of the county, offers its lands in 20 and 30 acre lots, at 20 to 40 dollars per acre. The Monte Vista Colony, comprising 1,500 acres, lying two miles east and north of Anderson, on the California and Oregon Railway, 220 miles north of San Francisco, offers land at 30 to 75 dollars per acre. The Rosenthal Colony has 9,000 acres in the Upper Sacramento Valley, seven miles south of Red Bluff, offered at 20 to 50 dollars per acre. The usual terms are: one-third cash, one-third in two years, and one-third in three years, with interest at eight per cent. on deferred payments. Shasta is separated from Oregon by Siskiyou and Modoc Counties. Of its area, 975,000 acres are fertile lower foothill land, 1,250,000 acres higher foothills and Sierra Mountains, and 335,000 acres Coast Range Mountains.

The Sierra and Coast Range Mountains cover a large portion of this county on all sides but the south, which comprises the lower foothill region, half-circular in shape, forming the upper part of the Sacramento Valley, and having an altitude of from 400 to 2,500 feet above sea-level. The south-west portion of the foothill region is a

succession of rounded hills, varying in height from 50 to 500 feet above the general level of the valley. In the central and southern portions are elevated land and valleys. From this section eastward there is a gradual ascent to the mountains, with many fine valleys and plateaux, the soil being a loose loam, composed of decayed vegetable matter.

The Sacramento River runs through a considerable portion of the county. Reading is about 300 miles from the sea by the Sacramento River, but only about 220 miles by the direct course of the valley, and is the head of steamboat navigation. The valley of the Sacramento is here from 10 to 15 miles wide, but is more or less occupied by the foothills of the Sierra Nevada on the east, and of the Coast Range on the west, and these hills extend occasionally in bluffs of 60 and a 100 feet in height, quite to the river banks, but they become less frequent descending, and eventually entirely disappear near the river, and the valley becomes wider, more open, and level. For several miles above Reading the valley is open, rolling prairie. The general level of the country is elevated above the level of the immediate river banks, and is broken by dry ravines and hills. Seventeen miles above Reading the course of the Sacramento for 96 miles to the mouth of Canoe Creek lies through heavily-timbered mountains, rising precipitously from the river banks to a height of 1,500 to 2,000 feet. Its course is winding, and seldom straight for over two miles together. Of the numerous streams of the country, the McCloud River, rising on Mount Shasta—14,440 elevation—runs about half its length through the county, and empties into Pitt River, which is a tributary of the Sacramento.

Cow Creek and its tributaries, Oak Run, Clover Creek, Bear Creek, and Battle Creek, are all running streams, rising in the Sierras, and draining the south-eastern part of the county. Montgomery, Cedar, Hatchet, Burney, and Hat Creeks are mountain streams emptying into Pitt River. The most beautiful stream is Fall River, which has three springs for its source, and winds 25 miles through the country, and empties into Pitt River. Springs abound in the foothills and mountains. The United States Signal Service Officer in Red Bluff records a mean annual rainfall of 28 inches. The months of July and August have no rain. June has 0·2 in., and September 0·4 only. The mean temperature for July is 83°, and for August 80°. The temperature will often reach 106° in the summer months. Irrigation can, perhaps, be dispensed with on a certain class of soil. With respect to Government land, much of it is on the sides of mountains, called "Upper Foothills," and it has been all run over, and the best bits picked out. It is possible, however, by taking time, and searching along the foothills of the Sierra, to find *small* pieces of land on which a home could be established. The timber is pine, cedar, and fir. Lumber costs from 12 to 30 dollars per 1,000 feet. All lands of good quality in easily accessible places throughout California are held by speculators.

The "Immigration Association" of California has been re-organized, and placed under the superintendence of Messrs. C. H. Street & Co., 415 Montgomery Street, San Francisco. At their office, maps, and plats of unentered Government land in the State can be seen, together with its character; and assistance will be furnished to persons seeking to enter for a homestead under the United States



laws. A library and reading-room is also provided, and it is advisable for all persons wishing to secure land to first visit this office.

The "Immigration Society" gives the following estimates of unentered Government lands in the State.

	Acres
Area of unentered Government land ...	38,000,000
Area suitable for lumbering, mining, etc.,	15,000,000
Area suitable for some agriculture ...	13,000,000
Area steep, rocky, and unfit for cultivation	10,000,000

It must be understood that any Government land of sufficiently good quality, and desirable in other respects, which may be left, will only be found in places remote from markets and difficult of access, or of such a nature as to require considerable labour and expense to get into order. Even to successfully enter a piece of land of this description, it is necessary a man should have at least from 500 to 1000 dols., clear of his travelling expenses. In addition to this, he must be prepared to "rough it" in every way, and work for others as well as himself; and in the majority of cases, it will be a long and tedious struggle to bring his land into a condition that will support him; much will depend, however, on the quality of the land he may be fortunate enough to find, and his own industry, thrift, and adaptability to the life. On the higher foothills of the Sierras, the rainfall is greater, and all along this range there are chances here and there of settling on some spot, which with patient industry may, in the course of years, support a small family by means of mixed farming. On the higher elevations of the Sierras, and the Siskiyou Moun-

tains north of "Shasta" County, immense snow-falls occur in the winter, and in some places avalanches ensue. Along the western base of the Sierra Nevada, for about 300 miles, through Shasta, Tehama, Placer, Yuba, Butte, Plumas, Nevada, El Dorado, Amador, Calaveras, Tuolumne, Marposa, Fresno, Tulare and Kern Counties and extending in height to about 4000 feet, is a tract of country consisting of rolling hills, narrow valleys, small flats, plateaux, deep ravines, with rocky and steep places. Its surface is covered with timber and brush, and it has an abundant rainfall, north of Tuolumne County, and a semi-tropical climate, with plenty of good water; and fruit, vegetables, and cereals will do well. The lands must be cleared, however, which will be expensive. There are chances of buying out a small improved place, occasionally, from some one who desires to go elsewhere. The foothills on the east side of the Coast Range extend through Shasta, Tehama, Colusa, Yolo, Solano, Contra Costa, Alameda, Stanislaus, Merced, Fresno, Tulare and Kern Counties. In Shasta, Tehama and Colusa, much of the land belongs to Government. There is plenty of timber on the higher mountains, and some fair land in places, but there is not so much rainfall, nor is the country so well watered as in the Sierras, but irrigation is, as a rule, not necessary. To take up Government land, the "intention" of becoming a citizen must be declared, and the fees will amount to 22 dols.; and at the expiration of five years, all regulations having been complied with, a title will be given. In the meantime, the homestead is free from taxation and cannot be seized for debt.

In Owen's Valley, Juyo County, land is offered in large tracts (640 acres) at 1 dol. per acre. In the Salinos and

Estrella Valleys it is said there are thousands of acres of land fit for cultivation when irrigated. These lands are, however, at present, remote from any market; and east of the mountains, and may be considered semi-desert lands. It is intended to extend a branch railroad from Mogave on the Southern Pacific Railroad, through Owen's Valley, and connection will be made with the Carson and Colorado line, which connects with Reuo on the Central Pacific (*via* Virginia and Truckee Railroad).

. . . . .

In any of the valleys south, land or cultivated vineyards can be bought. Care must be exercised in purchasing the latter, to find out the reason for selling, and condition of the soil. It was estimated by the surveyor-general of California, that there were about 3,000,000 acres of swamp and overflowed lands in the State. These lands when reclaimed are of surpassing fertility, and 80 bushels of wheat per acre have been raised on land of this class. Good valley lands in California produce about 30 bushels; reclaimed swamp lands from 35 to 40 bushels; but the highest average product of wheat, taking all classes of land together, has not exceeded 20 bushels per acre. Mr. Ross Browne describes three classes of land in California subject to overflow—the tule lands, bordering on lakes and rivers; the low alluvial valley lands; and the salt marshes, bordering on the shores of bays and estuaries. The tule lands derive their name from a species of gigantic rushes which grow upon them, forming a mass of roots and fibres that contribute mainly to the growth of the land itself. For centuries past these tules have been burnt off by the Indians in the dry season while in search of game, and

the accretions formed by the roots, mingled with the ashes, together with deposits of soil carried down from the uplands, have gradually caused them to rise above the level of the ordinary water-surface. In seasons of flood, or by the action of tide where it prevails, they are submerged, unless protected by levees or embankments. The principal portions of the tule lands of the State lie along the shores of Kern, Rio Vista, and Tulare Lakes, south; extending thence, northwardly, in a belt along the San Joaquin River, as far as their junction with the tule lands of the Sacramento, which commence above Red Bluff, following southwardly, both sides of the Sacramento River, till they form the great delta into which the two rivers are united. Mr. Browne regards these lands as better adapted to the production of grass than any other crop. He believes they would be more profitable bearing from 5 to 8 tons of alfalfa, timothy, or blue-grass annually per acre, than they could ever be under permanent cultivation in wheat. They will produce jute, flax, ranice, hemp and other textiles, but their great value consists in the fact that they are some of the finest meadow lands in the world.

As an illustration of the wonderful productiveness of these reclaimed lands, the following results of actual experiments are given: Twitchell Island, in the delta of the Sacramento, and San Joaquin, was purchased by a Kentucky company, who paid for 3000 acres 25 dollars per acre. By the simple process of burning the tules, scattering the seed in the ashes, and tramping it in by running herds of sheep over it, they planted 1,000 acres, which gave them a gross yield of wheat amounting to 36,000 dollars. As high as 75 bushels to the acre was

produced on particular tracts, with a general average of 40 to 50 bushels. At the Mormon settlement in the Sacramento Valley, an average yield of 40 bushels per acre was produced. Where crops are irrigated during summer, the annual product is greatly increased, and two or three alternate crops of different products produced in a season. The yield of these moist lands in alfalfa, timothy, and other grasses, is enormous. Five tons to the acre is considered an ordinary crop, while as high as 8 tons in a single year was nothing uncommon. At 15 dols. a ton, allowing one-half for expense of cultivation, baling, and shipping, a very handsome profit can be made.

Speaking of the importance of a complete system of irrigation, Mr. Browne says:—Irrigation is necessarily and inseparably associated with reclamation. It would be of comparatively little use to reclaim from overflow the swamp-lands of the Sacramento, or San Joaquin Valleys, without providing at the same time an efficient system of canals and ditches for irrigating them during seasons of drought. The lowlands have the advantage in retaining their moisture to a later period in the season than the uplands; but experience shows that their productiveness is materially affected by drought, and that no reclamation is perfect which does not include the means of irrigation.

The ramie plant, *Urtica tenacissima*, was first introduced into the United States by Mons. Ernest Godeaux, French Consul in New Orleans, 1867, and Benito Raelz, a Bohemian botanist, once a resident of Santa Comapan, in Mexico. Any idea of its successful cultivation seems, subsequently, to have been abandoned. The tissues



called "Japan silk," Canton goods, grass-cloth, nankin-linen, and many other varieties of goods, are generally made of ramie material, mixed with other fibre more or less. Almost all the dress goods—mixed with brilliant materials and imitating silk fabrics—are made in part of ramie. Leeds and Bradford were the principal manufacturing centres using this staple as a substitute for silk in many sorts of goods. It is a common error to consider ramie as a substitute for cotton. Ramie is a perennial plant and semi-aquatic, cultivated in China and India; and the tule-lands of California are considered well-adapted for its cultivation. The problem of the successful cultivation of ramie consists in a cheap and rapid preparation of the fibre, and this problem Mr. Forbes of Atlanta, Georgia, thinks he has solved. By his process every fibre retains its original length, and the gum and rosin in the bark are dissolved cheaply and quickly. The specimens recently exhibited by Mr. Forbes are beautiful, very long and silky, and might pass anywhere for raw silk. There is already a market in this country for ramie, and experiments made in various parts of the south demonstrate that it can be successfully cultivated.

Mr. Fremerey of Texas, in *Manufacturer's Record*, gives the following method of cultivating ramie. The seed should be first sown in a bed in March, where they will have to be treated with some care. When they are from 6 to 7 inches high, they are mature enough to be transplanted to the field. The ground for a ramie plantation should be ploughed to a depth of from eight to ten inches, and sub-soiled to a further depth of from four to six inches, in order to allow the tap-roots to get a

firm start. This work done, two furrows of six inches deep and two feet apart are ploughed, in which the slips are placed, at distances of one foot. They are planted so that only the leaves stand out. On each side of the rows, a foot of ground should be kept clear for the use of the plants. A space of one foot on each side of the bed is left for cultivating roads, and for irrigating purposes. The plants require no further tillage than light cultivating after each crop, and some weeding in the first year. No pains should be spared at the very start, as upon the first care the success of a plantation depends. Soon after transplanting the plants should be irrigated, for the purpose of setting the ground firmly round the roots.

As soon as the plants have reached a length of 15 or 16 inches, one of the sprouts of each should be bent over in the centre of the bed, and covered with ground, leaving some three or four inches of the top free. These sprouts soon take root, and in a few months the whole patch is covered with luxuriantly growing plants. The sprouts not bent over have to be cut near the ground, for the better development of the roots. By the end of June, the stalks will have reached a height of three or four feet, when they should be cut, regardless of the value of the fibre. New sprouts will immediately make their appearance, eight or ten to each root, growing so fast as to be almost one inch long 24 hours, and furnishing, in six or eight weeks, the first fair crop of fibre stalks. The propagation of ramie is done not only by seed, but also by sprouts, cuttings, and roots. Not long after planting, suckers will appear in the roads. These should be cut after each crop, as the roads must be kept

free for irrigation and sweeping purposes. In the first year the ground should be kept free of weeds ; after that the plant will perform this work itself, by suffocating them.

In the Southern States ramie blooms during July and August, and seed ripens in September. Mr. Fremerey thus estimates the returns :—"An acre of land contains nearly 44,000 square feet, on which 20,000 ramie plants can be grown. On a two or three-year-old plantation, each root produces from 25 to 50, or even 60 or more stalks. I only admit 15 stems, growing to a length of six or seven feet. Sixty-five stalks of ribbons peeled dry, or green, will yield one pound of marketable ribbons (I only will admit 100 stems), at the rate of five cents per lb. I thus figure: 20,000 plants by 15 stalks equal 300,000 stalks; 100 stalks yielding one pound, this equals 3000 lbs. of ribbon ; at five cents per lb., 150 dollars ; four crops per year, equal 600 dollars gross returns per acre." Mr. Fremerey counts in the expense of transportation to a decorticating machine at 16 dollars, and the cost of preparing four crops at 50 dollars. Mr. Walter Forbes has invented a chemical process, which, according to all appearances, is a complete success ; and if it is simple, and cheap enough to be employed by the planters themselves, this expense must be carried largely to the profit side. Whether for nursery purposes or for cultivation, the land must be sufficiently elevated to receive the benefit of natural drainage ; because the roots will not live long in a watery bottom. Land that is deep, rich, light, and moist sandy alluvia, is well-adapted for this purpose, The area of fertile lands in the magnificent Joaquin

Valley, is nearly 7,000,000 acres. At the southern end of this valley, in Kern County, is situated the "Miramonte Colony Association." Kern County has an area of 8160 square miles, one-third of which is in the southern end of the Joaquin Valley, and the rest consists of portions of the Sierra and Coast Range Mountains, and part of the Mojave Desert. An extensive system of the Artesian wells is being inaugurated here for the purposes of irrigation. Some of these wells are said to be delivering from 500,000 to even 2,000,000 gallons a day. The lands of this "Colony" are being offered at 600 dollars for 20 acres, including a perpetual water right for irrigating and domestic use, on the usual three-year-payment system, with six per cent. interest. The Southern Pacific passes through this country for 117 miles, and C. H. Street & Co., 415 Montgomery Street, San Francisco, are the agents for this and the other colonies mentioned. It is not to be assumed that much, if any, of the land offered is of the fertile description of that in the choice valleys of California. Although much of the semi-desert lands may with irrigation be made productive, it requires something more than water to give good results, and the depth and nature of the soil must be critically examined before investing. Oranges, lemons, pears, peaches, apricots, nectarines, prunes, pomegranates, olives, figs, and grapes; also almonds, apples, and walnuts, are produced. The culture of raisin-grapes, white Adriatic figs, peaches, apricots, or Bartlet pears are recommended in this colony, as also vegetables and alfalfa. No doubt, efforts will be made to palm off comparatively worthless tracts of land under the irrigation system. Inferior soil is dear at any price, inasmuch as the expenses of improvement

are equally as great, and the results will not be satisfactory.

Mr. Ekin Smith, in a report to the California State Agricultural Society on the choice of lands for vineyards, says:—I purpose to confine myself to the consideration of vineyards for wine making, rather than for market-grapes, since the value of the latter for the market is governed more by size and appearance than by inherent qualities; and the very circumstances which produce size and appearance are often detrimental to the wine. Almost any locality in the interior of California can be made to produce fine market grapes. Not so for wine. First-class localities are comparatively scarce, and the area limited. Without doubt any vineyard can be improved by cultivation, but unless the physical aspect and chemical properties of the soil are favourable, a first-class wine cannot be produced. A soil rich in decomposed organic matter will often produce grapes of a fine appearance, but the wine *will* have an earthy taste. This fact alone excludes almost all bottom lands from the list of good localities. Sands have not this objection, but are nearly destitute of mineral salts, and therefore cannot produce a high-flavoured wine. But the greatest of all evils is an undue quantity of potash, and this objection lies against nearly all lands not having sufficient drainage, and many hills, whose bed rock is composed largely of felspar. Common felspar contains from 12 to 15 per cent. of potash, and enters into the composition of many of the rocks of our foothills. Granite, gneiss, and mica slate, contain about 40 per cent. of felspar, which decomposes on exposure and sets free the potash. Where the hills are steep, and the drainage perfect, the



evil is not so great, as the potash passes off in a soluble condition. Potash is an element of fertility, and grape vines absorb it largely, and thrive and produce abundantly with it in excess, but its effect upon the wine is pernicious. One of the prime essentials of good wine is tartar, and where potash is also present in solution, they readily combine and form a salt which is deposited on the sides of the cask. From this salt tartaric acid is made, instead of remaining in the wine, and we wait in vain for a fine flavour to be developed; it is neutralised by the potash. Lime is also an alkaloid, but having great affinity for carbon, is generally found as a carbonate; and while it is not desirable in excess, to make a still wine, is indispensable to make a first-class champagne, from the large amount of carbonic acid it affords. Soils having a substratum of magnesian limestone are not open to these objections, for although magnesia is an alkaloid, it is not soluble in water, and not known to enter into the composition of plants; but it is less fertile, and vines do not bear so abundantly. All lands having a subsoil of clay are objectionable; the roots will not penetrate it, and the vines are likely to suffer from drought, and it generally contains too much potash, as the clay is decomposed felspar. The richest lands in California, now all in a high state of cultivation, will be found in the regions of the old Missions established by the Catholic priests, ranging from the year 1769 to 1830. Each Mission was then a little principality, with its 100,000 acres, and perhaps 20,000 head of cattle. The tables of the padres were abundantly supplied with fruits, vegetables, and wines, and the stranger was entertained with unbounded hospitality. The old

Missions are as follows : San Rafael and San Francisco ; Solano, north of San Francisco Bay ; Dolores, near San Francisco ; Santa Clara and San José, near Pueblo San José ; San Juan ; Santa Cruz and Carmel, near Monterey ; Soledad ; San Antonio and San Miguel, in the valley of Salinas River ; San Louis Obispo ; La Purisima, Santa Yuez ; Santa Barbara, and San Buenventura, near Santa Barbara ; San Gabriel and San Fernando, near Los Angeles ; and San Louis Rey, San Juan, Capistrano, and San Diego, on the coast south of Los Angeles.

The valley of San José in the Coast Range has the finest climate of any in California. It is 60 miles in length, and contains about 320,000 acres of splendid soil. From the summit of El Toro a magnificent view of the valley is obtained, and the ascent can be made on a sure-footed animal (about  $45^{\circ}$  acclivity). The valleys of Sonoma, Napa, Bodega and most of the Sacramento Valley, are equally favoured as to fertility, but those adjacent to the coast have by far the best climate ; but it will require a considerable amount of capital to secure a farm in these favoured regions ; from 500 to 1000 dols. per acre.

After California was organised into a territory the wealth and power of these Missions excited the jealousy of the Government, and by a decree of the Supreme Government of Mexico in 1833, the Missions of Upper and Lower California were secularised and became public property. The following series of tables furnished by the United States Signal Corps exhibit the temperature of the four citron belts of the Northern Hemisphere.

## ITALIAN CITRUS BELT.

Places.		Average Yearly Temp.		Average Winter Temp.		Lowest Temp.
Naples, ...	...	61·3	...	48·5	...	—
Rome, ...	...	60·7	...	48·9	...	—
Florence, ...	...	58·8	...	44·3	...	—
Pisa, ...	...	60·4	...	46·4	...	—
Genoa, ...	...	60·4	...	44·9	...	—
San Remo, ...	...	60·1	...	48·9	...	23·0
Mentone, ...	...	60·9	...	49·0	...	23·0
Nice, ...	...	59·5	...	47·8	...	—
Cannes, ...	...	59·5	...	49·6	...	20·0

## SEMI-TROPIC FLORIDA.

Jacksonville, ...	...	69·5	...	58·7	...	19·0
Pensacola, ...	...	68·4	...	55·7	...	16·0
Sandford, ...	...	71·0	...	58·0	...	28·0

## SOUTHERN CALIFORNIA CITRUS BELT.

Poway, ...	...	50·3	...	50·2	...	21·0
Riverside, ...	...	61·0	...	50·4	...	17·0
Los Angeles, ...	...	60·5	...	50·0	...	23·0
Santa Barbara, ...	...	61·1	...	54·0	...	30·0

## CITRUS BELT OF THE SACRAMENTO VALLEY.

Sacramento, ...	...	60·2	...	48·3	...	18·0
Auburn, ...	...	59·7	...	46·2	...	18·0
Colfax, ...	...	59·5	...	46·0	...	18·0
Nicolaus, ...	...	62·0	...	50·9	...	18·0
Marysville, ...	...	64·2	...	50·0	...	18·0
Princeton, ...	...	62·8	...	48·2	...	18·0
Oroville, ...	...	64·9	...	52·0	...	20·0
Chico, ...	...	63·8	...	47·0	...	18·0
Red Bluff, ...	...	62·4	...	46·8	...	18·0
Redding, ...	...	63·8	...	47·8	...	18·0

Number of Orange Trees planted in Beetle County (and other fruits), North California—

Places.		Oranges.	Lemons.	Olives.
Oroville District, ...	...	20,816	1,581	3,808
Palermo ,,	...	40,348	5,124	13,646



Places.		Oranges.	Lemons.	Olives.
Thermalito District,	...	32,370	10	5,181
Wyandotte	„	815	57	7,800
Paradise	„	—	—	5,600

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		94,349	6,772	36,035
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Places.	Figs.	Nuts.	Deciduous.	Grapes.
Oroville District,	940	130	16,550	52,200
Palermo	3,200	—	79,701	77,480
Thermalito	961	859	5,843	6,722
Wyandotte	3,105	302	13,697	20,579
Paradise	—	—	—	—
Rio Bonita	—	—	85,000	—

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	8,206	1,291	200,431	156,981
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Shipments of Oranges from Southern California, on authority of Riverside Press, for 1888-89.

San Bernadino County,	...	...	292,180 boxes.
Los Angeles	„	...	400,547 „
Orange	„	...	92,896 „
Ventura	„	...	10,886 „

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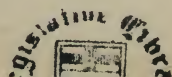
Total	796,409 „
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Value to Growers, 1,373,716 dollars.

### ASSESSMENT SCHEDULE FOR 1889.

Places.	Table.	No. of Acres of Grape-vines Planted.			Total.
		Wine.	Raisins.		
Alameda,	250	3,345	—		3,595
Alpine,	—	—	—		—
Amador,	40	950	—		990
Butte,	506	111	295		912
Calaveras,	200	1,180	20		1,400
Colusa,	531	21	—		552
Contra Costa,	350	3,450	—		3,800
Del Norte,	—	6	—		6
El Dorado,	300	1,485	—		1,785
Fresno,	183	3,800	12,182		16,165
Humbolt,	—	—	—		—
Juyo,	16	25	—		41
Kern,	—	—	—		100



Places.	Table.	No. of Acres of Grape-vines Planted.			Total.
		Wine.	Raisins.		
Lake, ...	450	950	—		1,400
Lassen, ...	—	—	—		—
Los Angeles,	—	—	—		—
Marin, ...	—	—	—		—
Mariposa, ...	—	—	—		64
Mendocino, ...	—	—	—		200
Merced, ...	200	400	1,460		2,060
Modoc, ...	—	—	—		—
Monterey, ...	500	—	—		500
Napa, ...	265	13,630	—		13,895
Nevada, ...	—	—	—		215
Placer, ...	1,814	380	484		2,678
Plumas, ...	—	—	—		—
Sacramento, ...	1,525	5,138	225		6,888
San Bento, ...	17	133	—		150
San Bernadino,	—	—	—		13,787
San Diego, ...	609	278	4,107		4,994
San Francisco,	—	—	—		—
San Joaquin, ...	920	1,107	429		2,456
San Louis Obispo,	432	426	—		858
San Mateo, ...	80	700	—		780
Santa Barara,	—	—	—		543
Santa Clara, ...	—	—	—		11,375
Santa Cruz, ...	320	1,025	—		1,345
Shasta, ...	99	140	147		386
Sierra, ...	—	—	—		—
Siskiyou, ...	—	—	—		4
Solano, ...	—	—	—		2,160
Sonoma, ...	1,075	20,805	—		21,880
Stanislaus, ...	—	—	—		550
Sutter, ...	94	51	504		649
Tehama, ...	427	2,145	—		2,572
Trinity, ...	200	—	—		200
Tulare, ...	4,350	2,495	—		6,845
Tuolumne, ...	—	—	—		925
Ventura, ...	—	—	—		—
Yolo, ...	800	2,000	1,200		4,000
Yuba, ...	—	—	—		215
Total	16,553	66,176	21,053		135,305



The total number of fruit trees growing in North and Central California is about 9,000,000 ; and in South California, 3,000,000. Nearly all the trees planted in North and Central California are in the great valley and foothill region ; including some on the coast. Only about 200,000 are returned from mountain regions. No return of trees was made by the Los Angeles County Assessor. It is claimed by the Los Angeles Chamber of Commerce that 40,000 acres have been planted. This would require nearly 4,000,000 trees.<sup>1</sup>

Cost varies with the kind of trees, location, soil, etc. Some come into bearing sooner than others ; some cost more at the nursery ; others require more care. In Santa Clara County the period of full-bearing is placed at seven years. Peaches and apricots bear crops at much younger ages, while all trees increase their bearing capacity up to 20 years. The cost stated is on a seven-year-old orchard ; and the average expense is as follows :—

FIRST YEAR.

				DLS.	CTS,
Breaking Ground, ...	...	...	...	3	00
Levelling Ground, ...	...	...	...	1	00
Laying off, digging holes, and planting, ...			...	6	50
Cost of Trees (108 to the acre, 20 feet apart), ...			...	21	60
Ten Cultivations, ...	...	...	...	5	00
Four Harrowings and Clod Crushing, ...			...	1	00
Pruning, ...	...	...	...	1	50
Total First Year,				41	10

SECOND YEAR.

Ploughing, ...	...	...	...	2	00
Ten Cultivations, ...	...	...	...	5	00

<sup>1</sup> "Cost of Making and Keeping an Orchard until Bearing."—(California Board of Trade.)

				DLS.	CTS.
Harrowing, four times,	...	...	...	1	00
Digging round Trees,	...	...	...	1	00
Pruning, ...	...	...	...	1	50
Total Second Year,				10	00

## THIRD YEAR.

Ploughing, Harrowing, Cultivating, &c.,	...	...	...	8	00
Digging round Trees,	...	...	...	1	50
Pruning, ...	...	...	...	2	00
Total Third Year,				11	50

## FOURTH YEAR.

Ploughing, Harrowing, Cultivating, Digging, &c.,	...	...	...	9	50
Pruning, ...	...	...	...	2	25
Total Fourth Year,				11	75

## FIFTH AND SIXTH YEARS.

Cost will be the same, except a little more for Pruning, which will be 3 dols. ; or for the fifth year, 12 dols. 50 c. ; and sixth year, 12 dols. 50 c.

Total cost, per acre, at six years old, 99 dols. 85 c.

Numerous nursery catalogues this year place nearly all deciduous trees at 15 dols. per 100, and many as low as 100 dols. per 1000. There is a great difference in the cost of preparing lands. Heavy lands cost the most. Sandy loam much less.

Profit is not generally so great, per acre, from a large orchard, as from a small one, proportionately. Some varieties come into bearing earlier than others, and at seven years will have produced more than those that mature slowly. This is notably true of peaches and apricots. Prunes come next in order of maturity, and cherries later.

Apricots—Ten acres of apricots (Mr. Righter), at four

years old, yielded 75 dols. per acre. At five, six, and seven years old, including short crop, the average yield per year has been (for ten acres) 1,600 dols. Ten acres of apricots (Mr. Snyder), at five years old, yielded 800 dols.

Prunes—Three acres, seven years old, gave 30 tons; sold for 1,200 dols.

Mixed Orchard—Six acres (a variety), at five years old, yielded 700 dols.

Ten acres of peaches, prunes, and apricots, four years old, yielded 150 dols. per acre.—(L. L. Natinger.)

Larger returns are well authenticated: 600 dols. per acre from prunes; 1,200 dols. per acre from cherries; and 500 and 700 dols. from peaches; but the Report classes them as *exceptional*.

It is the opinion of the San José Board of Trade, submitting this Report, that the State cannot produce more fruit than will find ready markets; provided the cost of transportation does not enhance the price to the consumer, so as to prohibit its use to a large majority of people.

The Report of the Los Angeles Chamber of Commerce says, "that orange trees (budded) bear, with proper care, in four years, and yield 100 dols. per acre on the fourth year." Discarding phenomenal returns, it is safe to say that from 500 to 800 dols. per acre are realised, under favourable conditions; and from orchards in full-bearing, under favourable circumstances, from 1000 dols. to 1,500 dols. have been realised. The profits of deciduous orchards should yield, with intelligent management, 100 dols. per acre. The Report states that they can grow fruit against the world; but the profits depend on the

rates charged for shipment. The Report further states that a large amount of land awaits purchasers at fair prices. At the World's Fair in New Orleans, in 1886, the Riverside Fruit Company, it is stated, took first premium for the best collection, not less than twenty varieties from any State or foreign country. (It is to be noted that California oranges come in after the "Florida crop" is over, and there were probably no others to compete with.) Of the 1,000,000 trees returned by county assessors in 1866, as planted in the State, 95 per cent. were accredited to three counties—Los Angeles, San Bernadino, and San Diego.

The range for the production of a fine quality of oranges in California is limited to the coast region, and the rich alluvial, or other soils, not parched by the dry, hot winds of the interior. The orange flourishes best in a warm, rich soil, composed of sand and loam, or sand and clay, not too dry, and sheltered from chilly and "parching" winds; and it will thrive in any country with a mean annual temperature of 62° to 84°. The locality, favourable for its growth, depends fully as much on the soil and situation, as upon latitude; and if the temperature be sufficiently high for maturing the flavour, the fruit is delicious in proportion to the uniform salubrity of the air, and those high temperatures which often force a large expansion of fruit, deteriorate its quality. "It is remarkable how much cold and snow the common oranges and lemons will bear at Rome, provided they are planted in a sheltered situation, not much exposed to the sun." (Dr. Seckler.) The Riverside District in the San Bernadino Valley is subjected to a temperature of 110° in the summer, and in

the country (except where irrigated) everything is parched with the heat. A fine-flavoured orange is not likely to be produced here, or in other similar places. In comparing the quality of the oranges produced on the Island of St. Michael's, in the Azores; and of Bahia, in Brazil, or some of the other West India Islands, with those of Malta, lying near the arid and sultry coast of Africa, it is to be noted that the former is always exposed to the equalizing breezes wafted across the Atlantic, while the latter is subject to more changes of season, and a higher range of temperature. At St. Augustine, Florida, a person who was the owner of a hundred standard trees, could safely rely on a yearly income of 2,000 dols., sometimes 3,000 dols. There were gathered from a single tree 6,500 oranges, but ordinary trees produce about 2000. At St. Augustine, the orange is of a superior quality, owing to some peculiar influence of soil and climate. The mean annual temperature of that place is from  $72^{\circ}$  to  $73^{\circ}$ . The extreme heats, from June to September, are usually as high as  $92^{\circ}$ ; but they have been known to have reached  $97^{\circ}$ . The extremes of cold generally range from  $38^{\circ}$  to  $40^{\circ}$ , but is sometimes as low as  $30^{\circ}$ . On the 9th of February, 1835, the temperature fell, it is said, to  $10^{\circ}$  or  $15^{\circ}$ , and nearly all the orange trees were cut off by frost. On the morning of the 9th January, 1765, the thermometer stood at 26 at St. Augustine, and the ground was frozen to the depth of an inch on the banks of the St. John.

#### BROWNE—TREES OF AMERICA.

The cost of producing wines. Mr. Haraszthy, of California, estimates as follows: The average production



through the State is about three tons per acre, which when made into wine, and kept till one year old, will yield an average of about 400 gallons.

The cost of cultivation varies in different localities from 10 to 14 dols. per acre, which does not include the expense of fertilisers, or insecticides. The cost of gathering the grapes, and delivering them to the winery is estimated at two dols. per ton, or an average based on the above-mentioned yield, of 6 dols. per acre.

The cost of crushing the grapes, and making them into wine, is about two cents a gallon, or eight dollars for an acre. This does not include the storage and handling after the wine is fermented and drawn into casks, nor of insurance, nor interest on the investment in vines, permanent improvements and casks. This shows a cost of 28 dols. for the production of 400 gallons, "average of the State," on one acre, or seven cents per gallon. It would seem that wine-growing in California should be profitable, after adding most liberally to the cost for items not embraced above. Mr. Haraszthy gives a table of prices realised upon wines shipped from 1875 to 1887. This table shows an average of 55·7 cents per gallon, the highest being 62 cents, in 1876, and the lowest 45 cents, in 1887. "Unfortunately, our wine interests are so controlled by middlemen that the producer does not get his share of the profits; but time and better organisation among growers will remedy this." Mr. Haraszthy has omitted the commission of the forwarding agent, and the expense of transporting the wine to the commission merchant, as well as the other items in the expense of producing wine. It is doubtful if the producer nets over 25 cents a gallon under the most

favourable circumstances. After passing through several commission houses, the wine is sold in California, and Oregon, at from 5 cents to 10 dollars per gallon, in small casks. By the time it reaches the consumer, in the Eastern States, 2 dollars 50 cents a gallon is the price, although the freight is only about 15 cents per gallon at the most.

The wholesale prices of the various grades of California wines in New York are as follows:

					Dollars.
Sherry,	per gal.	...	...	...	0·90 to 1·50
Port,	,,	...	...	...	0·90 „ 1·50
Muscatel,	,,	...	...	...	0·90 „ 2·25
Angelica,	,,	...	...	...	0·90 „ 2·25
Claret,	,,	in brls. only,	...	...	0·60 „ 0·75
Rhine Wine,	,,	,,	...	...	0·75 „ 1·00

PURE CALIFORNIA DRY WINES.

Superior Quality.

Wines of the Edge Hill Wine Co., St. Helena, Cal.

				Dols.
Sautern,	(2 doz. pints), per case,	...	...	5·50
Golden Chasselas,	,,	,,	...	8·00
Cabinet Hoch,	,,	,,	...	4·00
Cabinet Burgundy,	,,	,,	...	6·50
Selected Clarets,	,,	,,	...	4·50
Tokay,	,,	,,	...	10·00

DRY WINES (IN BULK).

Linfaudel, Claret,	per gal.	...	...	...	0·90
Riesling, White Wine,	,,	...	...	...	0·90
Claret,	,,	...	...	...	0·60
Burgundy,	,,	...	...	...	1·00

CALIFORNIA BRANDY.

In original packages of 10 gals. (sup.) per gal.	...	...	3·00
American Cognac, per gal.	...	...	1·75 to 3·50

## IMPORTED CHAMPAGNE.

	Dols.
Jules Mummi & Co., Grand Sec, per case, qts., ...	29·00
Cliquot, yellow and white label       "       "       ...	29·00

## DOMESTIC CHAMPAGNE.

Imperial, per case, qts.,       ...       ...       ...       ...	6·00
"       with "imported capsules" per case,	
qts.       ...       ...       ...       ...       ...	7·00
Wines of Rev. S. Parisis, New Mexico.	
By the barrel, per gal.       ...       ...       ...       ...	1·40
Wines of John Moran, Los Angeles, Cal.	
By the barrel, per gal.       ...       ...       ...       ...	0·95

Mr. Ross Browne remarks that he has seen wine retailing in San Francisco at 1 dollar 50 cents a bottle, while it sold at Los Angeles for 40 cents a gallon, or eight cents a bottle; grapes sold at eight and ten cents a pound, while the producer got only 75 cents a hundred; and fruit thrown into the Bay of San Francisco, because the fruit dealers could not sell it fast enough at five cents a pound, while the fruit growers would be glad to sell it at 30 dollars a ton. Boxes of choice fruit can be purchased of the jobbing dealers at San Francisco for two to two and a half cents per lb. What does the producer get now, not over one cent probably, and this fruit (grapes) is retailed to the consumers in the Eastern States at 20 to 25 cents per lb., the freight being about one and a half cents per lb. No people on the face of the earth submit to systematic robbery with such patience as the American farmers do. It seems well-nigh impossible to form any proper combination amongst them for their own protection, they are so disunited by party political strife, and every advantage is taken by

unscrupulous politicians, who wish to prevent any unity of action.

"Dried fruit" is now receiving much attention in California. The yield of an acre of raisin grapes at four years old is estimated at 30 lbs. per vine; 435 vines to the acre, equal to six and a half tons per acre, equal to about two tons of raisins making 200 20-lb. boxes. The market value is given at two dollars per box, giving 400 dollars per acre. From this should be deducted another "commission," and the cost of cultivation and preparation, which would be about 50 dollars per acre. An effort is being made to show that California raisins are now even of superior quality to the best imported.

The California State Board of Trade publishes the following from the *Pall Mall Gazette* of Sept. 5th, 1889: "*The Anglo-American Times* reports that 4,000 boxes of California raisins sent last autumn to London, brought better prices than the famous layers from Malaga, and as a happy consequence orders have come to California from Amsterdam, Vienna and Australia." The importations of foreign fruits and wines into the United States for 1886-87 were: Raisins, 40,660,603 lbs.—twice the yield of California; figs, 8,752,898; prunes, from Bordeaux alone, 840,299,19 dollars worth. Wine imports, valued at port of shipment, 7,056,850 dollars worth. Of nuts imported there were 20,608,480 dollars; of oranges, 1,741,644 boxes; and of lemons, 2,281,087 boxes for the year 1886-87.

From Messrs. Thurber, Whyland & Co.'s prices current, New York, 1889, the following quotations are made: "Finest Dehesia Layers, 22-lb. boxes, 6 crowns, 7 dollars; California raisins, crop 1889, Layers, imperial,

Forsyth, 20 lb. boxes, 2 dollars 75 cents. Mr. C. H. Street & Co. give a market value in San Francisco of 2 dollars per box for what they call the ordinary commercial raisins, leaving only 75 cents per box for freight and commissions before sold in New York. California prunes, best, are 13 cents, and best French,  $15\frac{1}{2}$  cents per lb.

So far, California dried fruits are not equal in quality to imported fruits; the seeds are too large and the skins too thick, and they lack the flavour. Probably a much larger profit can be made on the domestic fruits by the dealers, but considerable improvement must take place in the quality of the former before they can supplant imported fruits.

The shipments of green fruit from California to States east of the Rocky Mountains for 1887 were:

Net weight exclusive of package, ...	11,363,020 lbs.
Gross receipts, ... ..	675,864.40 dols.
Freight paid, ... 283.033.80 dols.	
Cartage, ... 6.002.40 ,,	
Commissions, ... 67.254.40 ,,	
Gross Charges, ... ..	356.289.85 ,,
Total net returns, ...	319.574.85 dols.

This shows a net average of 2.8 cents per lb. by the producer, less the expenses of cultivation, etc., etc.

It must be noted that only the best quality of green fruits can be exported from California, and it is doubtful if a sale can be made at all of a considerable part of the production, as any but the best would not pay for the freight and commissions.

The quality of California fruit.—All the green fruit



shipped east is picked before ripe, and for that reason alone is of inferior flavour. Under the most favourable circumstances the fruit of California is inferior in flavour to that grown in the eastern States. The peaches and pears of Delaware and New Jersey especially are of much superior quality in a favourable season.

The vegetables grown in California, while of immense size, and of particularly fine appearance, are very inferior in flavour to those of the eastern and northern States. Meat also is of inferior flavour, and vegetables, fruits, and meat in Oregon, and Washington, are of superior quality to those produced in California. Both in Oregon and California there is a quantity of ordinary fruit, every year, that is not saleable. Nurserymen supply inferior trees, and fruit culture is engaged in by persons who do not understand it. There always will be a demand for a superior quality of fruit, and fruit culturists should spare no pains, or expense, in starting an orchard on proper principles, and with the best varieties of fruit.

The labour question is one of much importance in the fruit regions of California. The "Chinese Exclusion Act" will deprive the fruit growers of the cheap and efficient labour of the Chinamen, on which they have so far been principally dependent. The immense area of 20,519,920 acres in Southern California is considered adapted for cotton. It requires little moisture, and is well adapted for irrigation. The growing season is long, dry and warm, and the gathering may extend to January. The expense of cultivating is not greater than that of corn, except picking. The yield in the State has averaged  $\frac{3}{4}$  of a bale per acre. There are thousands of acres of land on the Lower Sacramento suitable for the

production of rice, but without cheap labour these crops are not likely to be much engaged in.

Dr. Gustav Eisen of Delano gives the following estimate of the cost and profits of figs. Cost of trees at the start, 15 dols. per acre, with expenses of cultivation about the same as given for other fruit.

ESTIMATE OF RETURNS FROM 10 ACRES OF FIGS.

*Trees set out at one-year-old.*

	DOLS.
At the end of first season, 10 acres, 700 trees, -	000 00
„ second season, „ „ 10 lbs.	
each, at $2\frac{1}{2}$ cents, - - -	175 00
„ third season, „ „ 50 lbs.	
each, at $2\frac{1}{2}$ cents, - - -	875 00
„ fourth season, „ „ 100 lbs.	
each, at $2\frac{1}{2}$ cents, 70,000 lbs., - -	1,750 00
Total	2,800 00
At the end of the sixth season, 700 trees give 400 lbs. each, 280,000 lbs., at $2\frac{1}{2}$ cents, equal	7,000

This is a very encouraging statement, but so far California figs are not in the market to any extent, and are not quoted at all. In the crystallised form, a few are sold at about 7 cents per lb. in 5 lb. cartons—in eastern markets. Supposing a settler commences with 20 acres of fruit land, it will require, at least, an expenditure of 4000 dols. in four years, including expenses of building small cottage, and all other items, to take him safely to the end of this term, when he begins to get an adequate return from his fruit, and henceforth he may, under favourable circumstances, get a net return of from 10 to 15 per cent. on his invested capital. This will, however, depend upon his judgment in the management of

his orchard. In all cases where a man has no practical knowledge of fruit culture, he should place his money in a "Savings Bank" on interest, and work on some good fruit farm, managed by an experienced and intelligent man, for one year. He can in the meantime select, or even invest in, a suitable piece of land for his own place. By adopting this plan he will avoid the very serious mistakes he is otherwise likely to make.

Descending from the summit of the Sierra Nevada Mountains, the first view of the Sacramento Valley is very impressive, but the grandest view of all is to be obtained from the summit of the Butte Mountain in the country between Cosumne and Mokelumne, whose ramparts of red volcanic rock tower 1000 feet. Its ascent is toilsome, but not very difficult, at an angle of  $45^{\circ}$ . Situated about half-way between the plain and the dividing ridge of the Sierra Nevada, its summit affords a view of the whole country. The mountains within ten miles usually have snow on their crests, and the Sierra Nevada range is only 30 miles distant. At the base of the Butte the old mining gulches lie. On the west, the horizon is bounded by the Coast Range, Monte Diablo in the centre, and Suisun Bay making a gap in the chain. Between this blue wall and the rough region at the base, lie the great plains of the Sacramento and San Joaquin, 50 miles in breadth, and visible for more than 100 miles. The city of Sacramento is charmingly laid out, the streets running at right angles with avenues of oak and sycamore, affording much needed shade, for this is a veritable furnace in summer; the thermometer has even reached  $120^{\circ}$ , and ague, bilious fever, and dysentery prevail, and mosquitos never die (hardly

ever). From Sacramento the view on all sides is over a level plain, intersected with groves of timber, and bounded on the east and west by the distant ranges of the Coast and Sierra Nevada Mountains. The brilliantly illuminated streets of Sacramento at night and the soft, cool atmosphere are very fascinating to the traveller who arrives at that time, but after a little experience of the heat of the ensuing day, he will probably wish to move on to the sea coast. In the early days of Sacramento the perils of traversing the streets by night are thus described. "Each man wore boots reaching to the knees—or higher, if he could get them—with trousers tucked inside; but there were pitfalls into which, had he fallen, even these would have availed him little. In the more frequented streets, where drinking and gambling had full swing, there was a partial light, streaming out through doors and crimson window-curtains, to guide his steps. Sometimes a platform of plank received his feet; sometimes he skipped from one loose barrel-stave to another, laid with convex side upward; and sometimes deceived by a scanty piece of scantling, he walked off its farther end into a puddle of liquid mud. Now floundering in the stiff mire of the mid-street, he plunged down into a gully, and was 'brought up' by a pool of water; now venturing near the houses, a scaffold-pole or stray beam dealt him an unexpected blow. If he wandered into the outskirts of the town, where the tent-city of the emigrants was built, his fate was still worse. The briery thickets of the original forest had not been cleared away, and the stumps, trunks and branches of felled trees were distributed over the soil with delightful uncertainty. If he escaped these, the

lariats of picketed mules spread their toils for his feet, threatening entanglement and a kick from one of the vicious animals; tent-ropes and pins took him across the shins, and the horned heads of cattle, left where they were slaughtered, lay ready to gore him at every step. In the main streets the revelry of miners and gamblers continued far into the night by the light of candles at four dollars a pound; the discordant sounds of brass bands and innumerable 'musical' instruments, added to the oaths, wrangling, and pistol shots of drunken revellers, made night hideous." The Sacramento (lower) varies from 200 to 300 yards in width, and after rain, when everything is green, the banks are very pretty. Benicia, at the mouth of the Sacramento, 33 miles by rail and 50 by sea from San Francisco, is a very pretty place. The country gradually slopes back from the water, and the Napa and Sonoma Valleys back of it form one of the most fertile agricultural districts in California.

The Sierra Nevada Range, in Southern California, is composed of a number of parallel minor ranges. The higher elevations are mostly bare and rocky, but the summits are more or less covered with pine and Alpine oak. Moisture is more abundant, and streams more copious in the higher elevations; but the wider coast valleys are, during the greater portion of the year, destitute of running water; the supply from occasional springs being evaporated in the very dry atmosphere. The altitude of the summit ridges varies from 3,000 to 5,000 feet. There is a scanty growth of pines and other *coniferæ*. Descending from the summit, small, luxuriantly-grassed valleys, fringed with scattered pine and



oak groves, and watered by small streams, which are occupied by settlers, are passed. A descent to a lower level brings you into wider basin-shaped valleys, bounded on all sides by rocky ridges. The streams spread out into sedgy marshes, and the pine growth is replaced by lowland oak and underbrush. In the summer season you wind down broad valleys with the dry, pebbly beds of winter streams; herbage is dry and wiry, and water confined to a few willow-shaded marshes, or isolated springs. Along the foothills in this region large colonies of bees are kept, and immense quantities of honey are sent east from California. Continuing west, by a series of undulations and abrupt descents, you pass, almost imperceptibly, the various ranges, till the smooth, brown outline of the Coast Range is reached. There is a heavy grade here for a short distance and then a rapid descent is made to San Diego. In a distance of 26 miles, after leaving the summit, a descent is made into the celebrated San Bernadino Valley, 50 miles long and 30 wide. It is fertilised by numerous streams, rising in the surrounding mountain ranges. Extending nearly due west to Los Angeles, this is the most fruitful region of Southern California, and very high prices were asked for fruit lands and established orchards during the "boom" fever, the last attack of which was so severe. On the western slope of the Sierras the various streams are remarkable more for their number than magnitude. Their sources are near the summit, their volume being dependent on local rains and melted snows; they are at their height towards the end of the rainy season. As the dry season advances they decrease in volume rapidly, till in July, at their mouths, they become absorbed in their porous,

sandy beds. Some few streams, which have their sources in the higher mountains, with a more equal supply of water, are excepted. The point at which the water ceases to flow in these streams is variable, and greatly influenced by the excessive evaporating power of the hot, dry atmosphere. During the night they flow farther down their channels, also more so in cloudy than clear weather; but in their beds water can usually be found a short distance below the surface. The descent of these streams in the rainy season may either be by a gradual process of saturation of their sandy beds, or it may be sudden.

After a stormy night, the San Diego River suddenly made its appearance in the form of a foaming body of water, moving steadily onward, and filling its banks to their brim. The streams of the whole of Southern and Lower California, with few exceptions, have the peculiarity of retiring into their sandy beds for the summer. There are, occasionally, springs in the lowest portions of valleys which furnish water for a limited area, and the mission of the very fertile San Louis Rey depended upon these for their fertility. The San Bernadino Mountains, which give the name to the valley mentioned, has the highest peak in California, 6,000 feet, and is about 40 miles from the ocean. Farther north, the space between the mountains and the coast becomes wider, sometimes reaching 80 miles. The most important of the inferior ridges extends from Mount San Bernadino to the south side of the entrance of the Bay of San Francisco; there called the San Bruno Mountains. Between this and the coast is the Santa Barbara Range, terminating at the Cape of Pines, on the south-west side

of the Bay of Monterey. Bordering on the Bay of San Francisco is the Bolbona Ridge. The principal harbours of California are the Bay of San Francisco, one of the finest in the world, Monterey, San Pedro, Santa Barbara, and San Diego—Santa Barbara is a very pretty place, 528 miles from San Francisco and 110 miles north of Los Angeles. The harbour of Santa Barbara is exposed to the violence of south-westerly storms. San Pedro is sheltered from the north-west, but open to the south-westerly storms. Twenty-five miles inland is the city of Los Angeles, and 126 miles to the south, by the Southern California line, is San Diego. The Bay of San Diego runs 10 miles eastwardly into the country, and is separated from the ocean by a flat, sandy island, on which is situated the “Coronado Hotel,” a large structure covering some acres of ground, and one of the noted winter resorts of the Pacific Coast. By means of water conducted in pipes across the harbour, irrigation is supplied, and grass and shrubs cultivated. There are a number of pretty private residences, and it is a very pleasant resort for the residents of San Diego during the summer. The Coronado beach is in front of the hotel. There is nearly always a heavy surf, except early in the morning in summer, and during the south-westerners it is very rough. It is always cool on this beach, and people who can afford it leave the inland valleys and spend the summer here, and at other resorts north. San Diego is pleasantly situated, and there are lots of hotels, but the fare is very bad, especially in summer, when mutton and beef are supplied from ill-nourished animals, the meat being very tough and insipid. Vegetables are, also, almost tasteless, and fish of poor flavour, and everything is badly cooked.

The hotel-keepers have reaped a rich harvest here of late years, especially during the "boom-fever." They seem to think that "climate" and "fruit" should satisfy their guests, and even the latter is of poor quality. The whole surrounding country consists of barren sand-hills, except here and there a fruit-farm, which is so covered with dust that it is difficult to ascertain, without going very close, what is growing on it. Not a blade of green grass is to be seen, except in gardens constantly irrigated. Everything growing is covered with dust; the roads are covered with it ankle-deep; and fleas abound, and their attentions to visitors are unremitting. There is little, if any, malaria of the ague-producing type at San Diego, and it is a pleasanter climate than Los Angeles in every way. As soon as the sun sets, it is cool, and a heavy dew falls, and there is danger of getting chilled. Even during the day, when the sun is very hot, it is dangerous to stand long at the corner of a street or in a draught anywhere, so cooling is the breeze. The influence of the climate is slightly relaxing, and persons unacclimatised will find even a moderate amount of exertion attended by a sense of fatigue. The water at San Diego was very bad, but improvement has been effected in this respect. The principal business of San Diego and Los Angeles has been hotel-keeping and real-estate gambling, but the collapse of the "boom" has made business exceedingly dull.

Their principal imports are: lumber, provisions of all kinds, coal, clothing, furniture, hardware, "innocent capitalists," invalids, and drinking water. Her productions are, principally, sand, fleas, and real-estate sharks. Her exports are literary productions, containing thrilling

accounts of the climate, and the future, and the ease with which a man can make a small fortune on 10 acres of desert land, with a little water; which "old residents smile at." "They have wealth in their 'climate,' and 'harbour,' alone." People, however, usually require something besides climate to live on.

"Where are the splendid pasture lands spoken of as good for sheep?" Experience teaches that sand and cacti do not make good mutton, and the carcasses of sheep exhibited in the butchers' shops at San Diego would do for Chinese lanthorns. The soil bakes so hard, that a crow-bar and a bucket of water is required to make a hole in it. Reverting to the Valley of San Bernadino, that is an oasis in the desert, but it is very hot and dusty most of the year. In a pamphlet issued by the "International Company," it is stated, that the "average" value of cultivated fruit land in this valley is 1000 dollars per acre, and that it pays 30 per cent. on that valuation. At the time this pamphlet was issued, the Californian epidemic of "boom-fever" was at its height, and some allowance must be made for the "composers." Persons desiring to invest in fruit farms in this valley will find opportunities at from 300 dollars to 500 dollars per acre. The best way is to get acquainted, quietly, with an old settler, and not let it be known you want to invest. When a man is making "30 per cent. profit" he wont sell; but you will not be troubled with many such cases. Even during the "boom" some fairly good fruit orchards were sold at much less than 500 dollars per acre, but you must deal with the owner, and not have anything to do with an agent, who, with the eye of a hawk, will "spot" you, on arrival. Spend a few weeks, or months if necessary, driving about



making acquaintances among the agriculturists, with a friendly chat, and smoke, and in this way, if you are discreet, you may get a better orchard, and save hundreds of dollars on your purchase. There is no feed in this country for stock, except in the foothills of the mountains, and there it is getting scarce ; but alfalfa can be raised in immense crops, and much may be done in the way of stock, in addition to the fruit growing. From a "Report" of the United States Commissioner of Agriculture, the following notes on alfalfa in California are given. In the San Bernadino Valley, alfalfa, growing *perennially*, gives eight cuttings per year, of fine quality, though extensive fields lie unmolested year after year. Immense herds of cattle are fattened, and the beef is superior to that of any other part of the State, while the hay is in great demand, and brings an extra price in the market. The roots are not of the fibrous and woody nature of the other grasses. Hogs feed on them with the greatest avidity, and often follow them down to the depths of two feet or more; although this by no means destroys their vitality. Its peculiar home seems to be in a warm, dry climate, where the ground never freezes, and frosts rarely, if ever, occur. It does best in a well-drained and friable alluvial soil, with a penetrable sub-soil of an argillaceous nature. In this climate it may be mown six times, or oftener, each year, and be depastured during the winter, or for a period of three months. When young it is extremely delicate, and should be sown in connection with barley, or wheat. When this is removed, it will generally be found to have attained the height of two inches, and thereafter the surface requires to be kept moist by irrigation, as the roots have little power of penetration, and the young plants

would, otherwise, soon wither on exposure to the sun. The second year it is able to take care of itself, and the fourth year it arrives at full bearing. The roots then ramify so widely and reach to such a depth, that it is able to bid defiance to drought. It does not begin to fail in productiveness in less than five years. When this occurs it may often be restored to its original vitality by ploughing and thoroughly pulverising the surface; the portion of the roots remaining below the reach of the plough will put forth fresh shoots, and the field soon again be covered with it. "When this grass is generally cultivated in the warmer climates, the northern and more temperate regions of this continent will lose their reputed superiority in stock raising." The freshet cut away the bank of a creek, exposing a section of an alfalfa-field. The roots of the plant had penetrated to a depth of from 12 to 20 feet; and were exposed by the washing away of the bank from the surface to the water-line. The diameter of the root at the crown, at the surface, varies from an eighth to half an inch. They taper gradually to the lower end, from which a cluster of roots or feeders put out. In the section exposed the roots were close together, but entirely disconnected, each one growing straight through the soil to the water, and producing on the surface a luxuriant branch of alfalfa; which keeps green the year round. A farmer near San José sowed three and a half acres with alfalfa, in February; and in September it was producing feed enough to sustain six milch-cows. Up to that time it had been cut twice. He thinks that ten cows may be supported when the grass has been fully established. A man who has noted the cultivation of this plant in California, for twenty years, has in no instance seen it succeed

without irrigation, except on alluvial soils on the margins of rivers, or low flats. The conditions of successful cultivation are, a friable, mellow, moist soil, easily penetrated by the long tap roots, which should find a permanent supply of water at a depth of not more than six to eight, and not less than three feet. The land should be thoroughly ploughed, and the surface crust well pulverised, and about 15 lbs. of seed sown per acre, and brushed in, but not covered too deep. The sowing should be just before a rainfall. An observer in the State of Alabama says, that although on clean land it does very well sown broadcast, experience demonstrates that under all circumstances it does a great deal better in drills. Until two years old it is rather a slow grower, and needs the assistance of occasional cultivation to bring it forward successfully in its contest with crab-grass and dry weather. When sown in drills, from 18 inches to two feet apart, this can easily be done. It will not require reseeding for several years, perhaps five or six. Alfalfa is successfully cultivated in Oregon and Nevada; also it grows on Vancouver Island, B.C.; in one instance observed. It is, therefore, certain that it will stand a considerable amount of frost, when properly established. It is noted in Nevada that the soil and climate seem to be well adapted to the plant. The subsoil is well drained, and every acre of sage-brush land that can be irrigated, after the alfalfa has become established, say two, or three years old, will produce from two to four times as much hay as the best bottom lands. A soil which seems to be destitute of vegetable matter will, when sown with alfalfa, in a few years be converted into a rich, black loam, filled with vegetable mould. The soil on land in which grain

is sown, is sometimes blown away to the depth to which it is ploughed, while the land which is laid down to alfalfa is constantly catching and retaining it. In one instance a piece of land which was once rough, and rocky, was sown with alfalfa; now, the rough places are smooth, and the rocks are covered up with a fine, black loam.

There is a constantly increasing demand for beef and other meats in the country; year by year the area of open pasture lands, affording sufficient feed, has decreased throughout the West, and with a constantly increasing population, and a diminished supply of stock, there is always certainty of a good profit and a "home" market for beef and other meat; and the man who can produce this, under favourable circumstances, will make a larger profit on his investment, taking one year with another, than the majority of the fruit growers in California. There is little, if any, profit in marketing green fruit. The transcontinental freight charges are low enough, owing to close competition, but the local rates are very high; for instance, the charges on 100 lbs. of fruit for 50 or 100 miles would be as great as for that weight from San Francisco to New York, or other large cities in the east. On fruit consigned to eastern markets, there is first the cost of boxing and transfer to the forwarding agent who takes his commission. In the eastern cities, on its arrival, it is sold by auction, and after the freight and commission is paid there is often very little left for the producer; and on the slightest appearance of damage the fruit will be sold at a mere nominal price, although afterwards sold to the consumer at a very good profit to the fruit buyers, amongst whom there is a very good understanding. The cultivation of the olive.—Mr.

Elwood Cooper, California, "State Horticultural Society,"—considered the most successful olive-grower in the State, says: "I have, growing on my place, olive-trees in the black adōbe, in deep bottom-land, in sandy-land, made from the wash of the mountains, in stony hillsides, and adōbe hillsides, and in table-land, where the subsoil is probably twenty feet deep, dark clay; and so far as I have known, there is no difference in the bearing of these trees, or in the oil made." Mr. Donders, of San Francisco, says: "Irrigation is always dangerous to the olive. The plant is sometimes benefited by it, but the quality and fineness of the fruit, never. Fifteen inches of rain, distributed in the course of the year, is enough for the olive; particularly when it commences to fruit."

The climate of Southern and, particularly, of Lower California appears suited to the growth of the olive, except that the rainfall is rather insufficient. "Bosc," a high authority, says that every species of soil, provided it is not marshy, is suitable for the olive, but in fertile land it is often rather productive of wood, and that the best sort of soil is on dry, sandy hills, with a gravelly subsoil. At Cumberland Island, Georgia (State)—some olive trees were once subjected to a temperature of 19° F. without being injured, so it is evident they will stand a good deal of frost occasionally—much more than the orange. In moist, rich land it produces abundance of foliage, without fruit. In the propagation of the olive, raising by seed is only resorted to in order to produce new varieties, or as stocks for grafting, as the fruit from seedlings, although yielding a fruit of a more delicate and higher flavour, is, usually, very small. Grafting improves the quality of fruit, but it is not so generally



resorted to as propagation by suckers, and cuttings. The last is the most practised. Limbs from an inch to an inch and a half in diameter are cut into lengths of from 12 to 15 inches. Trenches 5 feet apart and 6 to 8 inches deep being prepared, the cuttings are placed in them about 18 inches apart and in an oblique position, so that when the earth is filled in, from one to two inches will remain above the ground. On the exposed end a little gardener's cement should be smeared to exclude the water, and over the whole some moss or loose sand is drawn for some time, to diminish the evaporation. In dry weather the cuttings should be occasionally watered, until they have taken root. Until the third year nothing more is required than to cultivate among the young plants, and to train them to a single stem. When three years old, the young trees should be planted out in the usual way, at distances of 30 to 48 feet. In "Languedoc" 25 trees to the acre is the rule, where other crops are cultivated between the trees; but, otherwise, 50 trees to an acre. The holes should be made large and deep, and should be dug several months before the trees are put out. The subsequent cultivation consists in removing the suckers, trimming out the dead wood, in manuring moderately once in three or four years, digging round the roots annually, and in ploughing once a year the intervals, unless other crops are cultivated between. Much difference of opinion exists, in France, on the subject of pruning; but unless it is deemed desirable to keep the trees low, for the facility of gathering the fruit, or to diminish the risk of their being blown down by high winds, all that appears to be necessary is to remove the decayed wood, and to keep the head of the tree moder-

ately open, for the free admission of light and heat. On the coast, where violent gales occur, low trimming would be best, and the same evil will probably lead to the practice of grafting on seedling stocks, the tap root of which will insure the stability of the future tree. For cuttings, in their soils, the roots will be too superficial for safety.

The manufacture of the oil is extremely simple, requiring no very complicated or expensive machinery. A revolving crusher for reducing the olives to a paste, and a lever, or screw-press, for the pressing of the oil from the pulp and stones; the latter being crushed separately, when divided from the pulp; bags of coarse cloth, or hair, to contain the pulp, and vessels for receiving the oil from the presses, and for separating it from the mucilage. As soon as the olives are ripe, which is indicated by their becoming of a dark colour, and soft, they are gathered by hand, and spread out over floors to the depth of a few inches. In this situation they remain three days, being daily turned, and the decayed berries carefully picked out. They are then placed in a triturating machine, until the pulp is reduced to a paste, and is detached from the stones. The stones having been removed, the pulp is then put into coarse and strong bags, and placed under the press, which should be worked very slowly at first. From the press the oil, mixed with mucilage, runs into vessels half filled with water. After standing from 12 to 24 hours, to give time for the mucilage to separate from the oil, the latter is decanted into other vessels, and remains undisturbed for about 20 days. It is then ready to be decanted again, and finally put into the barrels in which it is to

remain. During this period, nearly all the mucilage will have been precipitated, but the oil is still likely to be "troubled" until it has been exposed to the cold. The oil from this expression is of the first quality. The pulp, or cake, remaining in the bags after the first pressure, is then broken up, moistened with warm water, returned to the bags, and again pressed. The oil from it is nearly equal to the first, and may be mixed with it. The stones having been reduced to a paste by grinding, are pressed in the same way, and yield an inferior oil, of a harsh taste, and running rapidly into a state of rancidity.

The quantity of oil which may be extracted from a given weight of the fruit is stated by M. Sieuve, "*Nouveau Cours d'Agriculture*," as follows : 100 lbs. of sound olives gave  $76\frac{1}{8}$  lbs. of pulp, and 22 lbs. of stones. The  $76\frac{1}{8}$  lbs. of pulp, when pressed, yielded  $21\frac{1}{4}$  lbs. of limpid oil of first quality. The stones having been ground, gave 6 lbs. 14 ozs. of kernel, and 14 lbs. 4 ozs. of woody fibre. The kernel and woody fibre gave  $5\frac{3}{4}$  lbs. of inferior oil. Together making 27 lbs. of oil from 100 lbs. of olives. The refuse of the manufacture forms a valuable manure.

When the fruit is not sufficiently ripe, the fresh oil has a bitterish taste, and when too ripe it is fatty. The finest quality of oil is prepared in Provence. This is a virgin oil, expressed with great care, from the ripe fruit, immediately after being gathered, and before the slightest fermentation has taken place. Olives intended for preservation are gathered before they are ripe, and deprived of some of their bitterness by soaking for eight or ten hours in a lye composed of one part of quick-

lime to six parts of wood-ashes in water. They are then bottled in a brine of common salt and water, to which is usually added some aromatic flavour.

The product of oil varies very much with the size of the trees, the character of the soil, and the fruitfulness of the season. In France they have large trees that are known to yield 40 to 60 lbs., or from  $5\frac{1}{2}$  to  $8\frac{1}{4}$  gallons of oil, when they give a crop, which is once in two years, and sometimes once in three. Small trees yield from 6 to 12 lbs. each. The mean produce of a tree in France is assumed to be 10 lbs. ( $1\frac{2}{3}$  gallons), and in Italy 15 lbs. ( $1\frac{1}{2}$  gallons) (United States measure). The produce of an orchard of 200 trees in Tuscany, for four years, was as follows: 615 gallons, 61 gallons, 164 gallons, 512 gallons respectively—total, 1352 gallons. In Italy single trees in a productive season have been known to yield 41 gallons (exceptional). The wholesale price of the finest imported olive oil in brls., 50 gallons (New York), is 2 dols. per gallon. For the south of France the mean annual yield of a tree at full bearing is 1 gallon or 50 gallons for an acre, worth about 75 cents a gallon. Mr. Cooper of California, "Report on Fruit Industry," Board of Trade, makes the following startling statements: "The only test I have made as to the quantities borne by an orchard—that is, taking all the trees—showed 122 lbs. of olives throughout the orchard—large trees and small 'seven-years-old from the cuttings.'"

The best result in making oil has been  $12\frac{1}{2}$  lbs. in one large bottle; the poorest result was  $10\frac{1}{2}$  lbs.

We have for the *tree* seven-years-old at least ten bottles of oil; and those bottles will sell readily anywhere and

everywhere at a dollar a-piece; he further says—"I was compelled to put up the price to two dollars—24 dols. a case—to keep my customers from quarrelling about it; and I am sorry to say they quarrelled about it just the same. As soon as I have enough, I shall put it back to 12 dols. a case. One dollar for a large bottle of oil is profit enough for an olive orchard."

The number of trees is not stated, and it is badly expressed, and, seemingly, an effort to "boom" the olive industry in California.

Mr. Arthur Young, speaking of olives in the south of France, and advocating their cultivation in the Southern States, says—"It is presumed that the best mode of promoting the general introduction of the olive into this country will be to recommend the mixed cultivation. As the olive only begins to bear about the *tenth year*, and does not arrive at its full production before the 20th to the 30th year, few persons would consent to expend so much labour before reaping any reward. But under the mixed system, nearly the full amount of the usual crops is made, and the manuring and cultivating of the grain crops will be sufficient for the olive trees, and the labour of planting the young trees is almost the only extra work they will require until they commence bearing."

The only crop which will grow in Southern and Lower California, without irrigation, is maize—when planted on moist alluvium—which would not do for olives; and irrigation is injurious to them. With every respect for the great resources of this fine State, there is not sufficient evidence to show that such phenomenal results are obtained, or that such profits are made by the fruit



culturist, as are suggested by Californians, whose eagerness to colonise uncultivated lands, perhaps, leads them into involuntary exaggeration. During the late boom in Southern California an eastern man went out there for the purpose of residing and purchasing a fruit-farm. He was supplied with a very warm letter of introduction to a real-estate agent there by a mutual friend. Mr. A——, after a short stay in the district, found a piece of property he took a fancy to, and adjourned to Mr. B——'s office to ask his advice as to that and other investments he had in view. "Well," said his friend, Mr. B——, "the fact is, you ought not to trust what I say. I mean this—I have been so long in this 'booming business,' and my interests are so tied up in it, that I am not a safe adviser; but I'll tell you what I'll do; I will introduce you to Judge C——; he is the man to advise you." It is worthy of note that the production of olive oil, in Italy, annually, is 70,000,000 gallons, valued at about 100,000,000 dols., considerably more than the value of the wheat exports of the United States for 1886.

It is reported that labourers and mechanics are fully equal to the demands, but during the fruit-picking season and in harvest-time there is a rush for cheap labour which is then difficult to obtain.

The cost of fencing in California is an important item. A rabbit proof fence must be used, costing about 1 dol. 40 cents per rod. Rabbits are very troublesome in Southern and Lower California. In the former the people became exasperated and effected a great slaughter in the following manner. A funnel-shaped enclosure of wire-fencing was made including seven miles of wire-netting. Hundreds of people turned out, and a large scope of country was

beat, and the rabbits driven into the enclosure. Seven thousand rabbits were killed in one drive, but they are so numerous that this will not suffice to relieve the country of the nuisance.

## LOWER CALIFORNIA.

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THE peninsula of Lower California extends from the 23rd to near the 32nd degree of north latitude, about 775 miles in a direct line, and varies in width from 35 to 70 miles. The coast, irregular in outline, is a succession of bays, harbours, and roadsteads. Most of these are shallow and exposed. Magdalena, about fifty miles in length and several wide, is the best. It is about 100 miles from Cape San Lucas, on the Pacific side. Nearly opposite to this bay is the harbour of La Paz, which is a fine bay and well protected from all winds, except the terrible hurricanes that blow in September and October. Eight or nine miles down the bay from the town is a

small harbour, sheltered on all sides, called Pichilingue. Half-way up the coast are two large bays—Ballenas, opening towards the south-west; and San Sebastian Viscaino, opening towards the north-west. Into the former empties the San Ignacio Lagoon, and into the latter Scammou's Lagoon. These lagoons are two land-locked bays, with comparatively narrow entrances frequented by small vessels, but the channels are reported deep. The Port of San Quintin, lat.  $33^{\circ} 23'$ , is said to afford a secure anchorage for a number of vessels. The Bay of San José, near Cape San Lucas, is a mere roadstead affording no protection from south-east gales.

The portion of the country lying south of La Paz is the roughest and most picturesque, having the highest and most rugged mountains, and the deepest valleys. The San Lazaro chain starts as low hills near Cape San Lucas, runs north-east to the peak of San Lazaro, perhaps 5000 feet high, falls near Triunfo to about 1000 feet, and continuing north-east again, rises in the high and frowning masses of the Cacachilas, forming an imposing background to the beautiful town of La Paz, as viewed from the bay. Small spurs run out from the San Lazaro chain down to the west coast, while eastwards, spurs and nearly parallel chains fill in the whole area to the eastern coast. Beautiful valleys lie amongst these mountains. The valley of San José del Cabo runs north-east of the high mountains, about 20 miles in length, in a high state of cultivation. Other valleys, smaller in size, but similar in most respects, occur; scattered here and there, and even on the summit of the high spur known as the Sierra de la Victoria is said to be a long chain of little valleys, with very rich soil, fine grass,

plenty of pure spring water, and bordered by groves and forests of oak and pine. North of this granite mass, and extending with some trifling breaks to Santa Gertrudis, or San Borja, lies a belt of table mountains of sandstone. These almost everywhere commence on the west coast as broad plains, rising towards the north-east so gradually that, were it not for their being cut by innumerable canons which show their steadily increasing height, one might still believe himself to be but a few feet above the ocean. The regular elevation of the tables continues to within a few miles of the gulf, where a sudden descent cuts them off, with a face so precipitous that, except in a very few places, it is impossible to find a pass to reach the coast. Seen from the west side, the mountains look like a sea of flat tables, barren, and covered with loose stones; while from the eastern face they are steep, rugged, and so serrated as to lose entirely their tabular form. On this side, and adjoining the coast, are some good little valleys. South of Loreto for, perhaps, 20 miles, is a tract of level land bordering the coast, and in some places 2 miles wide; most of it covered with fertile soil. The spur which starts from San Borja as a chain of partially isolated hills, becomes more marked near the coast, and after passing San Andres, it assumes very respectable proportions, growing higher and larger, entirely occupying half the width of the peninsula, and connecting with the Coast Ranges of Upper California. East of this, and north of Santa Maria, the country is chiefly sandy desert with a few fertile spots. The greatest height of the mountains is estimated at 5000 feet; many of them are mere piles of broken rocks, while others are covered with grass, shrubbery, and small trees.



A large portion of the country is rough, mountainous, dry, and desolate, and covered with cactus. As a stock country it has been very much over-estimated. The thorny nature of the undergrowth heavily discounts sheep raising, for wool purposes, and the country is subject to long continued droughts; sometimes for two or three years in succession. Bunch-grass grows in many places, and north of San Borja alfalfa, burr, and other clovers are found. Several plants of the acacia family withstand the drought, and on these the animals feed when the grass disappears. The principal of these are the mezquite and lipua—mules, horses and cattle feed on these and thrive, when there is not a blade of grass in sight. The high meza lands above the summit of the Gigantea, and between Gertrudis and San Borja, owing to constant fogs, are said to be never effected by drought; and cattle flourish. Between Rosario and San Diego, the country consists of a series of valleys, pretty well watered. In the San Andres valley, and the adjoining plains of Santa Anna, is a good grazing region. There is a lake of brackish water, half a mile long, never dry, which animals drink freely. While the water in the ponds is nearly all of this nature, that of wells sunk is, as a rule, fairly good. There are no streams worthy of being called rivers in the country; they are only a few feet in width, except some in the north, adjoining Southern California. In the valleys of San José del Cabo, Todos Santos, Comondo, Purissima, San Ignacio, San Rosario, San Ramon, Guadalupe, and Fia Juana are permanent streams. The San Ramon and Rio Fia Juana have as much water as the Los Angeles River. Most of these streams sink on reaching the plains, and a system

of carefully prepared ditches will be required to make the water available for irrigating purposes. There are many smaller streams than those mentioned, flowing perennially in the canons. At certain places cereals grow without irrigation, but it is in consequence of the soil being constantly moistened from a storage underneath. In such places large crops are raised, and are spoken of by persons interested in attracting settlers, in a manner that tends to induce the belief that it is owing to a sufficient rainfall. On the west side, adjoining the Pacific, is a plain extending from near Todos Santos, to the mouth of the Arroyo of Purissima, about 175 miles in length, with an average width of 10 miles. About half of this is covered with good soil, but there is no water. South of Loreto, for twenty miles, there is a tract of level land along the coast, most of it fertile soil. Farther north, at San Bruno, San Juan, and south of Moleje, are broad valleys from nine to thirty square miles in area, of good land. In many canons off the plain of Todos Santos are fertile patches of soil. Nearly all the most favoured valleys and lands are owned by private parties and speculators, who ask high prices; or are already in cultivation. On suitable soil, when irrigated, enormous crops can be raised. Vineyards are everywhere, and the grapes and wine are of superior quality. Tobacco, cotton, and sugar cane are extensively cultivated, especially in the south. Several species of palms are natives, and the date grows wild. Plantains and bananas, figs, oranges, olives, lemons, limes, pomegranates, peaches, and in the northern parts, apples and potatoes, which, however, are of poor flavour, grow abundantly. Wheat, barley, maize and oats are cultivated in the north;

also tobacco and alfalfa would yield enormously with irrigation, and afford abundant feed for stock. The difficulty will be to find sufficient water to irrigate the meza lands that are suitable for cultivation. So productive is the soil, under irrigation, that a few acres would support a family, provided a market could be depended upon. The mineral resources of the country, so far, have not proved remunerative. Lumber is brought from the North Pacific Coast and sold at a very high price. Coal has been reported in places where it did not exist. It may have been confounded with asphaltum. Gold, silver, and copper have been worked in various parts. Gypsum, in its crystallised form of selenite, occurs in many places. Salt is abundant, especially at San Quentin, Ojo de Liebre and Carmin Island, in the Gulf. The expenses of collecting, shipping and duties, however, have deterred people from working it. On the west coast, bordering the northern part of the Bay of Magdalena, and the long arm which extends northward, are extensive plains nearly level, rising insensibly to the east, and, in great part, covered with rich soil. These plains, almost destitute throughout of the scattered stones on the surface which render so much land on the peninsula valueless, are covered with a dense vegetation, principally a large species of cactus, but there is no water on the surface. The climate of Lower California is so mild that cultivated plants of both tropical and temperate countries grow side by side. The winter temperature averages from  $60^{\circ}$  to  $70^{\circ}$ . The maximum summer temperature will range from  $85^{\circ}$  to  $110^{\circ}$ . On the coast it is always cool after about 8 a.m., when the breeze commences, but back in the valleys it is very warm; and

when occasionally a hot easterly wind reaches any locality, it is positively welting in its effects. On the eastern coast, along the Gulf of California, the climate is unfit for any but the inhabitants of tropical countries. Up in the high lands and mountains, the climate will, of course, be more bracing, but the general tendency of the whole climate, no matter how agreeable it may appear for a short period, is towards relaxation and indolence. The British, or North American settler, will soon find he is more inclined to swing in a hammock, smoke, and eat fruit, and see others work for him, if he can get them, than to exert himself. In the valleys, where the richest soil prevails, it is very malarious, producing ague and a chronic bilious condition. Muscular exertion will be found fatiguing, and gradually a chronic state of indolence will supervene, which may very materially affect his financial prospects.

Professor Agassiz is reported as saying, touching the climate, that it was one of the favoured spots on earth. The International Company quoted this statement, and was unwilling to allow the thermometer to range beyond prescribed limits; but it does all the same, and the impression made by the climate on persons who travel about for a comparatively short period, is very different from that made on a permanent resident. There is very little difference in the climate at San Diego and the northern portion of the peninsula of Lower California. At San Diego, in the city, on the 1st October, the thermometer reached 100° in the shade; and back in the valleys it was reported as high as 110°. The average rainfall is from nine to ten inches during winter; there is none during summer. The whole country, as in

Southern California, is infested with fleas, but those of Lower California are, perhaps, of a finer physique. Their attentions to the stranger make his life a burden, but after a few years' pasturage they get tired, and seek a change in the person of a new arrival. An important item in the settler's supplies will be several barrels of Persian insect powder for use at night ; but in the day-time the free application of petroleum to the lower parts of the garments is useful in preventing, to a certain extent, their invasion. The nightly battles with these invisible foes, added to the relaxing nature of the climate, is trying both to the temper and constitution. It is advisable that the settler should acquire some experience before making a permanent investment. The dust in summer is very trying ; it is ankle-deep on the roads, and in driving it is impossible sometimes to see where you are going. Bathing in the sea is attended with danger here and in Southern California. There is a variety of the ray fish, with a sting in its tail, which lies in the muddy sand of the beaches. If trodden on, the sting is thrust into the foot, the pain being great, and you may be laid up for a month. Shoes should be worn to avoid this danger. In swimming in deep water, it should be remembered that the barracuda—a species of pike well known in the West Indian waters—is also here, and has a habit of biting bathers. No instances of the kind can, however, be referred to as occurring on this coast, known to the author. Building material of all kinds, furniture, and flour are very expensive. The lazy, mongrel population of the country, vindictive when offended, is a most objectionable feature ; but the families of Spanish descent afford good society. The



whole coast of the peninsula abounds with fish. There are seals and whales; and the pearl fishery on the Gulf of California is valuable. In the time of the Missions, when very small portions of the soil were cultivated, the four districts of San José, San Antonio, and Todos Santos contained a population of 35,000. There can be no doubt the resources of a portion of this peninsula are equally as great as those of Southern California, and under efficient management, the country is capable of supporting a considerable population; but at present the great expense of necessary supplies would consume a large portion of the settler's capital at starting, and until the country is opened by railroads there will be no market facilities.

The shooting in the country consists of quail in immense numbers, but very small in size; ducks on the lagoons, which are, however, fishy in flavour; and a few deer. In the sea the "bass" is said to abound, and would afford excellent sport.

Rattle-snakes, scorpions, and centipedes abound. The timber in the country is scarce and small, except in the neighbourhood of streams; it is, however, durable, and said to be good for shipbuilding. There are some fine live oaks in places, the wood of which is very hard and heavy.

## NEW MEXICO.

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THIS territory has an area of 122,444 square miles. Mining and stock raising are the chief resources, the area of land suitable for cultivation being extremely limited, and confined to the valley of the Rio Grande Canadian River and their tributaries, principally. What can be accomplished on other areas by means of irrigation, supplied by Artesian wells, remains to be demonstrated in the future. From the town of San Elceario in Texas, 25 miles below El Paso, Texas, to the south boundary of the "Jornada"—a distance of 85 miles—the valley of

the Rio Grande is from two to five miles wide, perfectly level, the river passing through it with many sinuosities. The soil is sandy alluvium, chiefly composed of disintegrated material, and, although of no great depth, is very fertile, when irrigated; its fertility being maintained by sedimentary deposits from the river. Shallow ploughing is necessary, or too much sand is turned up. Seven miles below the Jornada is the town of Doña Ana, the oldest in New Mexico. Five miles above El Paso the Rio Grande commences to make its way through the chain of mountains which intersect its course, and to a point in the neighbourhood of Molino it is bordered closely, on both sides, by a range of high and rugged mountains. At Frontera the range on the west side subsides into the vast level table-lands, which extend with little interruption many miles to the westward; but on the east side the mountains gradually recede from the river, becoming more rugged and lofty, until they unite on the Jornada del Muerto with the continuous ridges of the Rocky Mountains. The river cuts through them, between Frontera and Molino, by a succession of rapids, and this pass was named by the Spaniards, on its discovery, "El Paso."

Opposite Doña Ana is the Mesilla Valley, ten miles in length along the river, and from one to three miles in width. Fort Fillmore is, also, opposite, and some fifteen miles below Doña Ana. The valleys of the Mesilla and the Rio Grande, within the limits described, comprise the richest agricultural land in New Mexico. The products are wheat, maize, barley, beans, alfalfa, and all kinds of vegetables and fruits. Alfalfa will produce three or four cuttings each year, and five tons to the acre is an average

crop, worth 12 dols. per ton, baled and delivered on cars; the net profit being about seven dollars per ton. But it is as a grape producing district that it should receive special attention. All the different kinds of grapes grown in California will grow as abundantly here, and are of a superior flavour, and contain more sugar. They also bear as early as on the Pacific Coast, and the wine made is of a superior quality. Mr. Thomas Ball has 35 acres in orchard and vineyard. He states that his property has paid him a ten-per-cent. dividend on an investment of 60,000 dols. At this rate the property is worth from 1500 to 2000 dollars per acre. The valleys have a very mild and equable climate, being sheltered on all sides by the mountains.

The course of the river being generally to the south-east, and the ranges of the mountains (on the east side) being nearly parallel to it, the whole of this area has a southern and western exposure, and the soil is sufficiently fertile, and of great warmth. The climate is said to resemble that of the south side of Madeira, and it is doubtful if any portion of the Continent will produce grapes of such quality and flavour. In addition to grapes, peaches, apricots, nectarines, plums, cherries, pears, apples, etc., are cultivated with success; but, of course, the two latter fruits will not arrive at the perfections obtained in a more humid atmosphere. So far the fruit pests, the curculio, borers, coddling-moth, or worms, have not troubled, and the climate is admirably suited to the curing of raisins. Uncultivated land ranges in price from 30 to 100 dols. per acre.

At Albuquerque, on the Rio Grande, land under cultivation (not fruit), with irrigating ditches, can be bought

for 30 to 60 dols. per acre; and unbroken land from 10 to 25 dols. per acre. The variety of grapes now in use in New Mexico is the "Mission" grape, which makes very good wine; it is, however, rather too sweet for the table. The better varieties of grapes for wine-making have only been tried in an experimental way, but sufficiently to show that they can be grown successfully.

The owner of a vineyard near Albuquerque states, that a fair yield from a good vineyard is about two gallons to a vine. With vines eight feet apart each way, there would be six hundred and eighty to an acre, which should yield at least 1000 gallons of wine. The selling price of wine at Albuquerque is from 25 to 40 dols. per barrel of 40 gallons, according to quality. Allowing half the proceeds for cultivation and making, this would show a very handsome profit, and leave a good margin for deficiencies. The city of Albuquerque on the Atchison, Topeka, and Santa Fé Railroad, is well situated, and having a population of 8000. The city is supplied with gas, electric lights, water works and street railway. The population in Bernalillo County, of which this is the capital, has increased from 7,591 in 1870 to about 25,000 in 1889. The cost of living is rather high. Furniture and all manufactured goods are brought from the east, and lumber is very expensive, as high as 70 or 80 dollars per 1,000 feet, and houses are, therefore, expensive to build, and correspondingly high in rent. On the farms the adōbe house is generally used. This is built of mud and straw, dried in the sun, forming the universal style of dwelling the Mexicans and Indians inhabit. The following average yields of some of the staple crops near Albuquerque are recorded:—



Wheat, per acre,	...	...	...	30 to 50 bushels.
Corn, „	...	...	...	60 to 80 „
Oats, „	...	...	...	40 to 50 „
Barley, „	...	...	...	30 to 35 „
Mangel and Beets, per acre,	...			40 to 60 tons.
Onions, „		...		7 to 15 „
Turnips, „		...		25 „
Cabbages, „		...		20,000 to 25,000 lbs.

From the Wholesale Market Report at Albuquerque, the following prices are quoted :—

Wheat,	...	1 dol. 50 c. to 1 dol. 75 c. per 100 lbs.
Corn,	...	1 dol. 25 c. „
Oats,	...	1 dol. 60 c. „
Barley,	...	1 dol. 60 c. „
Asparagus,	...	12 dols. 50 c. „
Alfalfa Hay,	...	15 to 20 dols. per ton.
Mangel Beets,		7 to 9 dols. „
Onions,	...	1 dol. to 4 dols. per 100 lbs.
Field Turnips,		7 to 9 dols. per ton.
Beans (white),		3 to 4 dols. per 100 lbs.
Potatoes,	...	1 dol. 50 c. to 2 dols. 50 c. per 100 lbs.
Turnips (table)		1 dol. 50 c. to 2 dols. 50 c. „
Carrots,	...	2 dols. to 4 dols. „
Cabbage,	...	1 dol. 50 c. to 4 dols. „
Sweet Potatoes,		3 dols. 50 c. to 5 dols. „
Cauliflowers,		7 to 8 cents per lb.
Peas,	...	6 to 10 cents „
Peaches,	...	2 to 4 cents „
Grapes,	...	2 to 4 cents „
Melons,	...	1 dol. to 2 dols. 50 c. per doz.
Water Melons,		2 dols. to 4 dols. „

The area of land capable of producing the necessary supplies being so very limited, and the population of the territory consisting, for the most part, of miners and stock men, who are not producers, there is a good market for all products; the profits on which will vary with

the exactions of commission agents. A large quantity of cereal and vegetable products, as well as butter, cheese, poultry, and hay, is imported every year to meet the demands.

Fencing is an important item in the establishment of a farm. Wire and boards must be used, and all material imported from the east. To fence in 10 acres will require 160 rods of fence, and for 20 acres, 240 rods; which, at 1 dol. 50 c. per rod, will amount to 240 dols. and 360 dols. respectively. A man with a capital of 4,000 to 5,000 dollars (£800 to £1,000) could make a good start; and a skilled horticulturist, with much less, by working for other people, would do well.

The Maxwell Land Grant Company, Raton, New Mexico, have an area of 1,750,000 acres in New Mexico and Colorado, upon which an extensive system of irrigation is preparing. Their land in New Mexico is, principally, situated on the tributaries of the Canadian River, many of which will afford irrigation. The company offer these lands at 10 to 15 dols. per acre, with the use of water—M. P. Pels, general manager, Raton, New Mexico. At the town of Trinidad, on the Colorado border of this grant, there are sawmills and a body of many thousands of acres of pine timber. A small proportion of this area is suitable for cultivation, and is to be found along the valleys of the principal tributaries: such as the Cimarron, Vermejo, Canadian, Rayado, &c. The fertility of some of this land is shown in the productions on a small scale. A cabbage weighed 45 lbs.; and a pumpkin on the Vermejo weighed 50 lbs. Irish potatoes are said to yield well on the mountain regions, 200 bushels to the acre of good quality. On the Rio

Grande they do not succeed in the Albuquerque district, and south of that.

Indian and Mexican labourers work for 1 dol. per day, boarding themselves. In passing through New Mexico on the Atchison, Topeka, and Santa Fé route, the country is exceedingly barren and sterile in appearance, the sage brush and coarse grass growing in tufts, and the whole surface of the country is gravelly and rocky, and water is very scarce in most places. Little beyond this can be seen from the train. It is only on the Rio Grande the voyageur will see signs of cultivation. Immense herds of cattle and sheep are grazed, but are mostly off the line of railway, in the valleys and foothills of the mountains, and near watering-places. Stock-running has been overdone, as usual, and the pasturage has been eaten out in many districts. It is said one person owned 70,000 sheep in the Albuquerque district. The course of the railroad is a succession of grades, alternately rising and descending mountains of from 5 to 7,000 feet in altitude, which are covered with pine. Beautiful views are obtained of the highest peaks of the distant ranges. Between the mountain elevations, the railroad traverses immense plains covered with sage brush and cacti. These are useless except for grazing, the cattle eating the small variety of sage brush, which, however, imparts a peculiar flavour to the meat. East and a little north of Albuquerque, 132 miles on the railway, is Las Vegas, a beautiful district in the mountains. A fine hotel, admirably situated, is a great resort for invalids. The arrangements for the comfort of the guests are excellent, and there are many attractions in the neighbourhood; fine views and some trout fishing. The climate of New

Mexico is excellent, and particularly healing for pulmonary and catarrhal affections, in common with Colorado. It is an extremely dry climate, very little rain falling, and in some parts none at all, for, perhaps, two years; but sometimes there are very sudden and heavy falls of rain in the mountains (cloud-bursts), which send a deluge down the water-courses, and wash away everything in its way. In many parts traces of these deluges can be seen, where for months, and years, not a drop of running water is ever seen. In some seasons the rains are frequent and heavy in the El Paso district, and some of the adōbehouses have even been washed down. The following abstract of meteorological records are from the United States Signal Officer's "Reports." Towards the western boundary of New Mexico the rainfall is less and more uncertain.

## ABSTRACT FROM METEOROLOGICAL RECORDS.

	Station.	Mean Bar meter	Mean Ther. F.	Dew- Point.	Highest Temp.	Lowest Temp.	Rain. Inches.
Jan.	San Elceario	26·26	46·3	31·0	67·0	47·0	0·004
Feb.	do.	26·354	46·29	39·19	...	...	0·795
Mar.	do.	26·370	57·7	47·9	81·0	29·5	0·015
April	do.	26·295	67·0	45·2	87·5	40·5	0·092
May	Frontera	26·146	76·4	42·0	95·0	50·5	0·013
June	do.	26·175	86·8	36·6	103·0	59·0	0·016
July	do.	26·174	85·9	41·2	99·0	71·0	1·537
Aug.	do.	26·206	84·1	42·1	...	...	...
Sept.	do.	26·254	79·13	57·89	92·0	65·0	1·052
Oct.	do.	26·233	67·6	42·1	87·0	47·0	0·013
Nov.	do.	26·233	50·8	36·6	73·0	25·0	0·211
Dec.	do.	26·317	45·5	37·7	63·0	27·0	1·255
Dec.	Near junction of Gila and Coloradorivers	29·979	59·8	...	72·0	48·5	...
Feb.	do.	29·937	68·0	...	82·0	53·0	...

The elevation of San Elceario is 3,607 feet. Frontera 3,796 feet, and the junction of Colorado and Gila Rivers, 275 feet. The season in which the foregoing observations were made was a very dry one. It is nearly always bright and clear in this climate, especially in the more northern portion, and in the Albuquerque district. Even when the thermometer is in the nineties, the heat is never oppressive, so dry and pure is the atmosphere. In higher altitudes the nights are often frosty in summer, and rheumatic affections are prevalent.

#### IRRIGATION.

In New Mexico, where irrigation has been practised over one hundred years, and where considerable uneven land has been cultivated, terraces or benches have been constructed. It seems, however, that in course of time the best of the soil of the upper terraces is washed to the lower ones; hence much of such land has become poor. Mr. Hunt, near Denver, Colorado, gives his experience with irrigation, and on land of this description, as follows:—

“My land being uneven, I experienced more difficulty than those having even ground, and for this reason was compelled to divide it into small beds or lands, of 15 to 25 feet, with back furrowing to form a levee, from three to five furrows down hill, and finished up with shovel and line; and, when completely and deeply ploughed, dragging a heavy stick of square timber, laterally, from end to end of each bed, until all the little elevations were dragged into depressions. I then harrowed it thoroughly, applied plenty of seed, and put



a heavy roller over it. The most favourable time to seed is when the early spring rains are likely to fall; natural irrigation being far preferable for starting the seed. A top of dressing of fine, well-rotted manure is of the greatest advantage in preventing the earth from cracking after frequent flooding. In case the land descends in two or more directions, as is often the case, I divide these long beds into others of convenient size, each having a different level, and each provided with a bank or level, on the lower side, of sufficient height and strength to admit of flooding to the depth of two inches. If the descent is not too rapid, it is much better to level each bed so that the water can stand of a uniform depth all over it; but when this levelling will cut away too much of the surface soil, let the level be high enough to 'back water' over the upper side. My main ditch is arranged to throw its entire contents with the biggest of these beds, through a sluice-box with a gate. A few minutes serve to fill this; while the surplus water is discharged into the next lower bed, through a box constructed as follows:—Take three pieces of inch board, 12 to 18 inches wide, and two or three feet long, nailed together like three sides of a box; braced across the open or top side. In this box I fasten a stationary gate, coming within three inches of the top. The box I pack in the levee so firmly, that there will be no leakage around it, and of such height, that when the water has entirely covered the upper bed, the surplus will escape over this half-open sluice, falling in the box, before striking the ground; by which the force of the current is broken, and the water is thus prevented from tearing up the soil. By the same process a long succession of

beds can be thoroughly and quickly watered, without labour and waste ; and, also, be made to do service, while the owner is sleeping, and in case of rain, none is lost. When the last bed begins to fill, I shut the main gate, and leave each of the series to soak away gradually. However, if the succession of beds is too long, the first gets too much water, and the last scarcely enough ; therefore, it is desirable to have a sluice-box for each bed, independent of the rest, connecting directly with the ditch. The larger the bed, the better, for less land is occupied by the levees, and it is easier to work the land, and gather the crops. If possible, employ an engineer to determine and mark the level for beds and levees ; for much time and expense will be saved by it. Clover once up and set, is safe from everything except drought ; and until it has grown enough to shade the grass somewhat, great care must be taken to prevent its being burned by the sun and wind. After this, the water does the rest. My first successful experiment was with a small piece of land about one-eighth of an acre, sown half with red clover, and half with lucern. This piece supplied almost the entire summer feed for two cows, during three summers ; being cut three or four times each season. In August, I sowed half an acre of red clover mixed with white. This came up and nearly covered the ground before winter set in. In the spring it began to grow nearly a month earlier than the common weeds, which had threatened to choke it ; and, at last, it smothered every weed and spear of wild grass which started amongst it. During the winter, while the ground was frozen, I had a fine quantity of manure scattered over it, causing a perceptible increase in its thrift. I

cut the third crop, September 15th, when it stood 12 to 15 inches high. From these crops I fed, from May to July 15th, two cows and an average of four horses, and since the last date, five cows, eight sheep, and four horses. The entire space occupied by the clover will barely measure two acres. No place in Colorado could be more unpromising than the very spot on which I made this year three crops of clover. The soil was below the average in quality, but was flooded ten or twelve times, and aided by a top spreading of manure. This system of irrigation must be too expensive for large areas, but I have taken from it this year more oats from one acre, thus treated, than from four acres irrigated in the ordinary manner."

In New Mexico, on level land, flooding is practised. The cost of irrigating canals will vary from one to three dollars an acre, and the cost of water supplied will range from 1 dol. 25 c. to 2 dols. per acre. The following notes are from a farmer of ten years' experience:—In laying off ditches to irrigate a farm, we first make mains from the public, or company ditch, and in making them we keep on the highest land, paying no attention to section or other lines. Having our mains on the highest lands, we can easily irrigate each way from them. The mains being made, we laid off the field into lands or divisions, varying in width from one to twenty rods. The divisions are always by small ditches, which are made by running a furrow both ways, and following with a wooden scraper made like an A. If our lands or divisions were dry for a long time, we generally preferred to divide them by running another main through. Small grain is irrigated by flooding. Supposing your field ready—the main and

laterals all in order—commence by shutting down the gate, or damming the main, so as to force the water on the land; and the greater the amount of water in the main, if it can be managed, the better, but no more is wanted in it than can be taken care of. The main, having been closed below, is opened at the highest part of the land, where, if the ground is level from side to side, and sufficiently inclined from the ditch, the water will soon find its way to the farthest end of the land. If, however, some portion is higher than the rest, the safety of the small ditches on each side of the land is apparent; for then the centre opening is closed, and the water let through the side ditches until it reaches the point of obstruction, when it is let out to flow on again; and this may have to be repeated again and again upon the same land, though generally there is no such trouble—the water flowing unobstructed over the whole. When the land has been fully flooded, the work is done, and the water shut off. If there are any low places where the water stands, on completion of the flooding, it should be drawn off at once in the side ditches, which have come into use again. Corn, potatoes, and garden vegetables are irrigated by sending a stream of water between the rows. Potatoes are easily spoiled by flooding, and do not need much water until in blossom. When the leaves of maize curl up in the middle of the day, it is an evidence of want of water. There are indications of the want of water which can only be learned by experience, but the beginner is more likely to err in using too much than too little. Standing water, if not drawn off, will destroy the crop; and if too much water is used the plants will turn yellow. In the irrigation of trees, avoid allowing

the water to touch the tree. Seeds should always be well rolled with a heavy roller or they will not come up. Sod land takes a great deal more water the first year. Water penetrates moist much more readily than dry soil, the particles of water having an affinity for each other. Mexican soil is usually of a black colour.

Another authority objects to flooding on soil on which water is likely to stand, and he is in favour of making the ground as level as possible, and using a machine which causes the water to run in little channels—seemingly a good method. He gives the following directions:—1st, Plough deep, where soil admits of it; 2nd, Avoid “dead furrows” as much as possible; 3rd, Endeavour to make your land level, and keep it so; 4th, Pulverise the soil thoroughly; 5th, Sow pure seed; 6th, Run your head ditches on a grade of not more than half-an-inch per rod, and five to twenty rods apart; 7th, Run the harrow in the direction you wish to irrigate; 8th, When the grain is up and well rooted, and the ground moist (not wet), roll at right angles with your head ditches; 9th, Commence irrigating before the crop begins to suffer from drought, and do not cease because there is a slight rainfall. The expenditure and trouble attending irrigation is a great objection to the average settler, but it has been demonstrated by experience that, by this means, crops are always certain, and the increased production will pay for the trouble, and it will be more extensively resorted to, even when the rainfall is in some seasons sufficient.

One of the most extensive and beautiful valleys of New Mexico is that of the San Luis, extending into Colorado, hemmed in on either side by high mountains,



and traversed by the Rio Grande del Norte and its mountain tributaries, skirted with bushes and a little timber. The Trenchara River, which comes in from the mountains to the east, is joined a few miles to the west by the Sangre de Cristo, and then flows on to the Rio Grande. A low stony mountain range, extending across the valley of the Rio Grande, separates the valley of San Luis from that of Taos. The Rio Grande passes through this range in a most formidable canon. There are forests of pines, and the views of the valleys, near and distant mountains, are very beautiful.

The valley of the Taos is large, and extensively cultivated. It is surrounded on all sides by high mountains, the Rio Grande both entering and leaving it by a gigantic canon. The mountain streams are large and favourably situated for irrigation, and the water of the river is also used.

Through both these valleys, extending a distance of nearly 100 miles from the Sangre de Cristo range, there is little grass, the natural vegetation consisting of artemisia, and a variety of cacti, chiefly the prickly pear. The pines of the mountains extend well down to the plains. In the high, small valleys of the mountains the grass is luxuriant, and flowers beautiful, till trampled down by stock. Here showers are of daily occurrence at seasons, but in the broad valleys nothing can be raised without irrigation, as little rain falls.

The Sierra Blanca range, of the Rocky Mountain system, extends nearly north and south to the east of the San Luis Valley, which is from 40 to 70 miles in width, and about 100 in length. The upper portion of the San Luis Valley, known as the Valley of San Juan, is rich

and fertile, and at one time abounded with grass, game, and wild horses.

The Rio del Norte enters a plain through a canon in the St. Juan Mountains, and it and its tributaries water this fair valley. The base of the Sierra Blanca extends from the Sangre de Cristo to Gunnison's Pass—in the Sangre de Cristo. To the north of the Sierra Blanca, but partially connected with it, a broken range of mountains extends to the Arkansas River, called the Sierra Mojada or Wet Mountain, from the amount of rain which falls on it. The range on the west of the San Luis Valley is called Sahwatch by the Indians, but is more generally known as the San Juan.

This portion of the country is, however, in Colorado, the State line being about the 37th parallel of latitude, and is crossed near Raton, a station on the Atchison, Topeka, and Santa Fé Line, in the Raton Mountains. The Maxwell Land Grant in Colorado includes 258,422 acres, chiefly of mineral lands, very little being fit for cultivation, but of that some is very fertile. Those bound to the New Mexican portion of the grant should proceed to Raton or Springer Stations on the Atchison, Topeka, and Santa Fé Line, and those for the Colorado portion to Trinidad, a flourishing town of 8,000 population. The Company's patent was confirmed by the United States in 1887. They can, therefore, give a good title to purchasers. All through Colorado valleys, land under irrigation is sold at about 100 dollars per acre, and much higher, according to its situation. There are many beautiful valleys, but the amount of good land is very limited, and the country overrun with stock. There is some charming scenery in this region, some of the moun-

tain ranges having an altitude of from 8,000 to 10,000 feet, with beautiful parks intervening, many of them of great elevation, the upper portion of the San Luis Valley being 7,567 feet. There is often a beautiful blue sheen on the mountains, and the sunsets are gorgeous. Two miles above the old ford, on the Cuchara River, about 40 feet wide, on a waggon trail leading from Raton Pass to the Pueblo on the Arkansas River, by ascending a butte (hill), a magnificent view is obtained.

Pike's Peak to the north, the Spanish peaks to the south, the Sierra Majada to the west, and the undulating plains of the Arkansas. The effect of this climate on the high table-lands and mesas, is wonderfully exhilarating, and one experiences a bouyancy of spirits and a greatly increased capacity for muscular exertion, which, however, in the higher elevations, is soon followed by loss of breath, requiring rest, from which, however, one quickly recovers. It has been before mentioned that rheumatic affections frequently occur in this climate. This is in consequence of the sudden and great variations of temperature. At an altitude of 7000 or 8000 feet the temperature from being 90° in the day will fall to the frost-line at night, and during the day sudden cooling breezes will cause the thermometer to fall very rapidly. While a shower of rain is going on in the foothill regions, snow is falling in the passes and higher mountains. It is to be noted, however, that the people seldom wear anything but a sort of cotton next the skin (canton flannel). If good flannel be worn much of the danger may be avoided. There are no flies or mosquitos, and this adds an additional charm. Rattlesnakes abound in many parts of New Mexico, especially in the Zuni

Valley. There are several varieties of these, and various other snakes. The ground is so thickly covered with cacti in some places that it is difficult to move without coming in contact with their thorns, and travelling is very tiresome, especially in the south-west.

The Denver, Texas and Fort Worth Railway runs through the north-east corner of New Mexico and then on to Denver. At Cuchara Junction a line leads west into the Maxwell Grant country, and at Pueblo lines diverge to all parts of Colorado. From Lamy Junction on the Atchison, Topeka and Santa Fé Line, there is a branch to Santa Fé and Espinola (New Mexico), and a branch from that point north to Denver. The whole country is now intersected with railroads. There is still some fair shooting to be obtained in the various mountain districts in New Mexico, but taking pack horses and going into the remote valleys of the ranges, bears, panthers, deer, antelope, and grouse, and wild turkeys are to be found. So much skin and pot-hunting is done, however, that the game is very scarce in most places. In the Sierra Madre Mountains, seemingly a part of the Rocky Mountains divided by the Rio Bravo, some good shooting may be obtained. In a journey of a day or two from Fort Wingate, sport may be had, but that portion of the Sierra Madre which extends into Chihuahua and Sonora and west and south of Monterey in Mexico will afford by far the best sport. These mountains are not a continuous chain with those of the same name in New Mexico and are sometimes called the San Luis Mountains. They rise abruptly from the plain about three leagues north of the parallel  $31^{\circ}20'$ , and as they run south assume the most formidable appearance of a

range on that parallel, west of the Rio Grande. They are called in Sonora and part of Chihuahua, the Sierra Madre, but do not entirely fill the conditions implied by that term, for the waters flowing from their base towards the Pacific Ocean often take their rise to the east of these mountains, and flow through chasms impassable for men, falling down the western slope in rapid descent, producing magnificent cascades. Through their whole extent, as far south as the parallel of Mazatlau, these mountains are said to be impassable for waggons. In the Sangre de Cristo range on the west of the "Maxwell Land Grant" some shooting can be had. Game was abundant there, and trout were numerous in the streams. North-west of this range in the Elk Mountains is a good hunting country. Trout fishing also is to be had in the Sangre de Cristo. These mountains are subject to heavy falls of snow, and fishing is best in June and July after most of the snow-water has run off.

Those who desire to settle in New Mexico or in the El Paso district, after selecting a place, purchase their supplies at some of the large cities east. The rates from Indianapolis, St. Louis and Chicago are about 3 dols. 50 c. per 100 pounds, or 296 dollars for a car-load of 10 tons or more. Supplies of every kind can be put on, and the Atchison and Topeka Company will grant favourable rates for passage and freight to a settler, on application to its agent. Real estate agents in New Mexico advertise for money to invest at 10 and 12 per cent. interest. It is not easy to get a safe mortgage anywhere in the country at such a rate, and it will be well to remember that these agents usually get a handsome commission from both borrower and lender, and are not over particular about



the safety of the security, if they can get the money invested and secure their commissions.

Considerable attention has been given of late years to the breeding of the Angora goat. Pure-bred Angoras are imported and crossed with the native goats, of which numbers are kept in New Mexico. At about the second or third cross the mohair begins to be valuable. There are herds of some thousands of the graded goats in California and New Mexico, and small herds of a few hundreds distributed through Oregon, and some in Washington. The climates of New Mexico, Texas, Arizona and California, are specially adapted to the production of a good quality of mohair, but the goats seem to thrive in Oregon, Colorado, Idaho and Washington. In New Mexico, Arizona, Texas, and parts of Colorado, in rocky cañons, where, on account of the difficulty of getting at water, sheep cannot be kept, herds of goats do well, as they can range in places inaccessible for sheep and cattle, and where watering-stations, in a semi-desert region, are few and far between. The occupation of one would give an extensive range, without fear of encroachment by other herds. The goats are not interfered with by wolves, but the kids must be watched; and panthers, occasionally, are destructive to the herd. There is a good deal of trouble connected with the breeding of the goats. The kids must be picketed with ropes and their mothers brought to them twice a day. The herd must be sheared twice a year, and supplied regularly with salt. Mexican herders must be employed, as they are used to the solitary life, which would be intolerable to most white men. One Mexican can take charge of 1,000 goats, or even more, except at kidding time, when an

assistant is required, and at shearing, when a party of shearers is employed. The clip of mohair from a first-cross would be only about  $1\frac{1}{2}$  pounds, coarse, and worth only 6 or 10 cents per pound. Graded goats can be purchased at Socorro, New Mexico, at four to six dollars each, and thorough-bred he-goats 50 dollars each. The clip of mohair from a well-graded herd will be from four to six pounds, worth from 35 to 45 cents per pound, and the kids worth two dollars each: the annual increase being at least 90 per cent. of the she-goats.

In Mexico and New Mexico the flesh of the kids is much used for food, and is very good, but amongst Americans there is much senseless prejudice against it. It would be better to commence with a well-graded herd, as the mohair would then have a good market value to commence with, and most of the he-kids could be kept for the mohair. The cost of a Mexican herder would be about 30 dollars per month; the shearings about 10 cents per head. The cost of ropes and salt would not be much; and when a herd is well established and graded there should be a profit of at least 20 per cent. on the investment; allowing for contingencies. Although the finest quality of mohair requires a dry, warm climate for its production, a very good price has been obtained for clippings from the Oregon Coast, on which there is so much rain. The demand for mohair is increasing in North America, as the following figures will show:

CONSUMPTION IN THE UNITED STATES.

			1888.	1889.
Foreign,	...	...	1,482,238 lbs.	1,720,432 lbs.
Domestic,	...	...	621,858 ,,	685,106 ,,

The prices of domestic mohair are as follows :—

Fine Combing, domestic,	...	...	45 to 50 cents.
Fine Medium	„	...	40 to 45 „
Medium	„	...	35 to 40 „
Coarse	„	...	30 to 35 „
Carding	„	...	14 to 16 „
Burry	„	...	10 to 15 „

The imports of mohair in England, for 1888 and 1889, were 20,000,000 lbs. and 17,300,000 lbs. respectively, and the highest average price in England for 1889 was 19d. per lb., and 50 cents per lb. in New York.

The total production of mohair in the United States is little over one-third of the amount used, and the quality of the best domestic mohair is said to be fully equal to the imported. At present home producers are protected by the duty on imported mohair; but, in all probability, the duty on raw materials will be entirely removed, and then it will be doubtful how successfully the American mohair can compete with the imported in price.

Of the importations in 1889 in England, 9,000,000 lbs. were from the Cape, and 8,300,000 lbs. from Turkey.

The inhabitants of New Mexico consist of cowboys, miners, Mexicans, half-breeds, and Indians. The merchants are principally Americans, and most of the stock-owners, miners, and many of the cowboys.

There is no danger to be apprehended from the Indians in the way of an outbreak, as they are under control of the United States troops. In the neighbourhood of mining camps, and at places where cowboys congregate, there is a very turbulent, rowdy element.

Of late years a number of respectable young men have taken to the business of cow-punching, as it is facetiously

called, and it is to be hoped, but hardly to be expected, that a little leaven will leaven the whole body of cowboys, for they are, as a rule, a blasphemous set of ruffians, and when under the influence of whisky generally want to shoot some one, and often do it. The towns along the line of the Atchison and Topeka Line in Arizona are much frequented by cowboys, and manslaughter and murder is of frequent occurrence. Some years ago, at Abilene, in Kansas, the town was set in an uproar by cowboys arriving from Texas with herds of cattle. They "ran" the town, to the terror of the inhabitants, who at length appointed a very resolute man as city marshal. Shortly after his appointment a drunken cowboy was observed going along the street, occasionally firing his revolver, and shouting that he was just off the trail from Texas. Just as he was about to pass the town prison, the marshal had got within reach, and, seizing him by the collar, bumped him into it, saying: "Here is the end of your trail, my friend." In a very short time the marshal restored order in the town.

## TEXAS.

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By far the most attractive portion of this immense State for the settler, is the north-west. The four great rivers of Texas—the Red River, Trinity, Brazos, and the Colo-



rado—have their sources at the eastern base of the Llano Estacado (Staked Plain). Between the 32nd and 34th parallels of latitude, a broad belt of well-watered, well-timbered country, projects for over 300 miles, like a vast peninsula, into the parched and treeless waste of the plains; approaching, at its western limit, within about 300 miles of the Rio Grande at El Paso. The eastern line of this immense region is the western limit of the timbered or well-watered country on the north. The rivers mentioned intersect this wooded peninsula at nearly equal distances apart. The navigable waters of the three principal streams of Texas—the Trinity, the Brazos, and the Colorado—approach nearly to the line of the 32nd parallel of latitude, but the Red River is navigable, in good water, a considerable distance above Preston.

East of Preston the valley of Red River averages about 14 miles in width for a considerable distance. About four-fifths of this valley is covered with large timber—a few patches of prairie of limited extent only, interrupting its continuity. The immediate valley is about 100 feet below the gradually receding bluffs which border it, and is overgrown by timber of good size, and best quality—oak, pecan, hickory, elm, &c.

The soil of the whole of this valley, as far west as “Red River Station,” is a black, vegetable mould, with (in many places) an admirably proportioned mixture of sand, and of great richness. This is the finest cotton producing region in North America, and since the opening of the country by railroads, large areas of the heavily timbered land have been cleared. One bale of cotton to the acre is a frequent crop, with good cultivation. East

and south of Preston the prairie and brush lands not in the immediate valley of the river have a black, waxy soil, very difficult of cultivation, as it bakes and cracks; and, in wet weather, its tenacity is so great that it has to be cut out from between the spokes of the wheels of waggons, and travelling on the roads is terribly fatiguing. The general features of the valley and adjacent prairie lands to the Arkansas boundary on the Texan side of the river, are, as regards the latter, prairie and brush land, having a curious corrugated surface called hog-wallow, and consisting for the most part of the tenacious black soil before described; and, with respect to the former, a continuation of the rich alluvium of the valley proper. The roads through this section of the country are horrible, in winter especially, consisting of a succession of the pits, or hog-wallow formation described, which is most tiresome to man and beast. Proceeding west from Preston, the character of the country changes. The "hog-wallow" formation is thankfully left behind; and the black waxy soil of the prairie and brush lands is replaced by a black, sandy loam, of great fertility, and admirably adapted to withstand drought. Cotton, corn, sorghum (a sugar-cane), sweet potatoes, and oats, are the chief crops raised. Next to the strictly alluvial soil of the river valley this is the richest and best soil to cultivate. The country is adapted to the cultivation of some kinds of grapes and fruits, such as melons, plums, peaches, and the small varieties of berries. On the rolling prairie lands south of the river and beyond its timber line, is principally a brown clay loam, which produces well, if sufficient rain, but does not stand protracted drought. In the valleys of the various tribu-

taries of the great rivers, there is the black alluvium on the banks, a black sandy loam, and a calcareous sandy loam on the flat prairies; the latter soil, however, requires more rain. Hot dry summers occur, which cause a failure of crops on all soils but the black, sandy loam and the alluvial; the ground literally bakes and cracks, forming deep fissures in many places. Dennison, in Grayson County, is the principal city in this portion of the Red River Valley.

The settlement of the surrounding rich country has been very rapid and extensive of late years, and there is no chance of securing any cheap land of good quality. The valley of the Trinity, between the waters of the Brazos and Red River, is about 117 miles in width, and contains about equal proportions of prairie and timbered lands on its upper waters and tributaries; but a considerably larger portion lower down. It is a gently rolling country of prairie and oak openings, presenting a beautiful appearance; groves of oak timber are so arranged that each elevated summit affords beautiful landscapes of groves, parks and forests, with intervening plains of luxuriant grass. This whole region is intersected by numerous clear streams, tributaries of the upper waters of the Trinity, and numbers of springs of pure water. The soil is a brown, sandy loam of rich quality, and the whole country was covered with luxuriant grass, in some places growing three or four feet high. The region described is bounded on the north by the Little Wichita River, on the east by the Clear Fork and its tributaries, and on the west by the West Fork of the Trinity River. For the sportsman it was a paradise. Almost every grove of timber in the parks contained a

band of deer (Virginian variety), and towards the northern boundary, on the mezquite flats, herds of antelope roamed; prairie grouse on the plains, quail in the timber and chaparral (sp.), ducks on the ponds and tributaries, and innumerable wild turkeys on the latter, afforded excellent sport for the shot gun. In the heavy timber black bear and panthers were numerous, and on the plains large herds of buffalo wintered, going north in the summer. The number of wild turkeys in this region was astonishing. In the autumn when the young broods united they literally swarmed, and could be seen in flocks of hundreds, so thickly packed when running that a rifle-ball sent at hazard amongst them would often kill several. When fat they often weighed 30 lbs., and are of very fine flavour. For years the Comanche and Kioway Indians, by frequent predatory excursions, kept out the hunters and settlers, and thus preserved the game and the beauty of the country. Sad changes have, however, taken place of late years. The country is now covered with unsightly villages and towns, and hideous snake fences, and miles of barbed-wire fences. The screech of the locomotive, and the yell of some drunken cow-puncher (cow-boy), takes the place of the stillness of nature undefiled, or the sounds sweet to the ears of the hunter; "and this is called civilisation;" but one who enjoyed the charms of this lovely country as it once was, turns from its present aspect with emotions only to be appreciated by kindred spirits. Two curious strips of very thick timber, called the Upper and Lower Cross Timbers, extending from the Canadian Fork of the Arkansas to near the 32nd parallel, intersect the valley of the upper waters of the Trinity and its tributaries.

The first of these, the "Lower Cross Timbers," is about 15 miles through, east and west, and commences 20 miles west of Red River at Preston; and the second, 8 miles across, is 40 miles farther to the west. The principal timber in these belts are the post oak, black-jack, ash, hackberry, pecan, &c. The three main forks of the Trinity are, the Clear Fork, the Elm Fork, and the West Fork. On the latter there is some very rough mountainous country; but north of this belt, intersected by its numerous tributaries, is the fine, rolling, park-like country before described, extending north to the tributaries of the Red River. North and west of the Little Wichita, and on the Big Wichita the country changes to a broken mezquite and buffalo grass region, and except in the valleys of these streams and tributaries the soil is too dry in character for cultivation. This is a splendid stock country and especially good for sheep in many places, free from the thorny mezquite bush, which tears the wool. A branch of the Missouri, Kansas, and Texas Railway extends to Henrietta on the Little Wichita, from which all parts of the region described can readily be reached. It is, however, already over-run with stock, and the fine pasturage eaten out in most places. Alfalfa would do well and other grasses also, if properly started, and this is one of the healthiest and pleasantest sections of the State for settlers. Maize and all cereals, and fruits of many varieties will flourish, and by going a few days' journey some sport can still be had.

Separated from the head waters of the Trinity by a dividing ridge, is the valley of the Brazos, extending 150 miles westward to the summit between its waters and those of the Rio Colorado. It is very similar in character



and natural features to the valley of the Trinity, but rather more heavily timbered to a point near the head of the Clear Fork. Fort Beluap, on the left bank of the main river, is 170 miles from Preston. The river opposite the Fort is 738 feet in width, with a gravelly bed, and with a depth of only a few inches in dry summers. The water is brackish and unfit for use, but stock drink it freely. East and west the country is gently rolling, dipping with a gradual slope of about 50 feet to the immediate bottom lands along the river. Bituminous coal of a good quality is found along the bluffs of the main stream. Pure water in abundance is found in the numerous tributaries which intersect its valley at intervals of a mile or two, and many springs are found throughout the country. In former times many terrible Indian outrages occurred throughout the district known as the Cross Timbers. Families were butchered with great atrocity, and stock driven off, and those settlers who escaped fled from the frontier, leaving their hogs, which soon became wild, and roamed in bands in the forests, never foraging until dusk, or during the night, and affording good sport, as well as good meat, to the hunter, for their diet of grass, acorns, and the pecan nut gave a very delicate flavour to the meat.

A most bitter hatred has always existed between the Texans and the Indian tribes; and acts of unprovoked hostility on the part of the former, were followed by terrible reprisals. Indian marauding parties would range down as far as Fort Worth, and lower still on the western settlements, carrying off horses, destroying whole families, and sometimes taking away women and children; and by rapid night marches, retreating in safety to their

domain on the head waters of the Red River. Many of the Texans were little better than the Indians. Feuds, marked by great atrocities, such as surrounding the house of some person regarded as an enemy, setting fire to it, and shooting its inmates as they escaped, have not infrequently occurred; and cold-blooded murders of their neighbours were of common—and still are of not infrequent occurrence. All this country is now thickly settled, and Indian raids a thing of the past. The country has filled up with law-abiding eastern people, who have established law and order in the country; but occasionally the vindictive, bloodthirsty character of the Texan manifests itself in the perpetration of some atrocious crime on anyone who offends him. Many years ago, malefactors in the Eastern States, who, by their deeds, made the country “too hot” for them, departed for Texas, and the letters G.T.T. would be marked on the doors of their houses. The descendants of these cut-throats are still to be found in the country, and resort to the old trade when they dare. After the war, the military government of the State was a great blessing to its peaceable inhabitants.

An amusing incident occurred at a small town on the Trinity in 1870; Capt. —, with a company of United States cavalry, being in charge of the district. The captain was sitting in the back part of a store, when a Texan ruffian, with two revolvers and a knife in his boot, having hitched his horse to a post, walked into the store. His first act—with a Texas howl—was to sweep off a lot of glasses and other articles on the counter. The store-keeper remonstrated, but the Texan, with vile language, told him he did what he d— pleased wherever

he went. While this scene was being enacted, Capt. —, who at once understood the case, had stepped out at the back of the store, and, fortunately, saw his sergeant, who was sent for a file of men to cut off the retreat of the desperado. Returning to the assistance of the unfortunate store-keeper, the captain suddenly presented himself to the astonished ruffian, covering him with his revolver. "Up with your hands." The Texan saw the captain meant "mischief," and complied, and at this time the sergeant and file appeared. "Now, my friend," said the captain, "you will find that *I* am the only one who does as he d— pleases here; pay for the damage you have done, and then we will see what we can do for you in the 'cooler'" (prison). The prisoner was disarmed and marched off.

When the management of the Indians was handed over to the "Indian Bureau," the military was not permitted to pursue parties of marauders into the Indian Territory—bounded on the south by Red River, and extending to about 100° of longitude, into what is called the "Pan Handle" of Texas. The officers of the Indian Department were jealous of any interference on the part of the military, and finding a most lucrative employment in handling the large appropriations made for this Indian Department, discredited the reports of the frequent raids made into Texas by the Indians, who, taking advantage of the situation, and being able by a forced march by night to escape across the boundary into the safety of their Reservation, terribly harassed the unfortunate settlers on the frontier. At this time an exciting incident occurred. General —, on a round of "inspection" of the frontier military posts, arrived at Fort Richardson, on the West

Fork of the Trinity, from Fort Beluap, with a small escort. The day after his arrival, intelligence was brought to Fort Richardson of the capture of a number of mule teams employed by a contractor hauling supplies to the military posts, at a point only seven miles from the former, and on the same road General —— had passed over the day before. Further particulars disclosed the fact that some 30 or 40 mules had been carried off, and many of the teamsters brutally murdered by a very large party of Indians. The general immediately ordered the commandant of the post, with a large force of cavalry led by competent guides, to pursue the Indians into their territory; and, taking a small escort himself, at once started for Fort Sill, the head quarters of the "Indian Agency." Owing to the occurrence of heavy rains and floods, the advance of the pursuing cavalry was much impeded, and before their arrival at Fort Sill, the chiefs of this band of Indians, "Kioways," named Satanta, Satank, and "Big Tree," coolly walked into the sutler's store one day, and, while there, boasted of their late exploit. This was reported to the general, who at once surrounded the sutler's house with a guard. Satanta and Satank were at once captured, but "Big Tree"—a small-sized but very athletic Indian—jumped through a window, taking the sash with him, and ran like a deer, it is said, but was pursued by cavalry and captured. Soon after this, the commandant and his force arrived, and the prisoners, under a strong guard of infantry, were placed in waggons and, escorted by the whole force of cavalry, set out for Fort Richardson. Large parties of Indians were seen on the flanks of the troops, and an attack was expected, but the force was too formidable

for them. Satank, who rejoiced in a most villainous countenance, strenuously objected to return to Texas, and commenced chanting his "death-song." He had managed to secrete a knife under his blanket, and, with this, suddenly made a furious attack on his guards, and was at once shot and thrown out of the waggon. The two remaining chiefs were safely lodged in the cells at Fort Richardson, where, after remaining some time, they were handed over to the "State," and were imprisoned, but eventually liberated. They ought to have been executed, but it seems that a fear of the terrible reprisals of the Indians, on the frontier settlements, had their chiefs been known to have been killed, induced this undeserved clemency.

The valley of the Brazos is well settled, also the Clear Fork—which has good water. The country drained by the Brazos and its tributaries is more uneven in its surface, and more densely timbered than the Trinity, to the east, or Colorado, to the west. Going west from the Clear Fork, oak and ash timber becomes much scarcer, until at the last tributary—the Double Mountain Fork—it is lost entirely. The Clear Fork is a running stream of 20 yards in width, with a narrow valley heavily timbered with pecan, elm, and other trees. Here was established years ago Fort Griffin, and at that time it was a magnificent stock country; mezquite grass, forming an elastic sward yielding to the feet like a rich Brussels carpet, covered the valleys and prairies adjacent, and horses would refuse all grain.

The country abounded with game, and also innumerable wolves, in attendance on the buffalo; bands of which wintered here. This whole country, however,



became thickly settled with stock men, and large herds depleted the pasture lands. The rainfall is scanty here, and summer is often accompanied by long droughts, rendering the cultivation of crops doubtful as to results, and good soil for this purpose is confined to the valleys proper of the streams. Passing west from the last tributary of the Brazos, and crossing a dividing ridge, the tributaries of the Rio-Colorado are reached; about 27 miles from the main stream. This valley, from the summit of the dividing ridge to the eastern base of the "Llano Estacado," is about 67 miles in width, and intersected the whole way, at distances of two to six miles, by running streams tributary to the Colorado. The east side of the valley is equally divided into "prairies," and forests of mezquite timber, and is much less undulating than the country to the east. The mezquite becomes less abundant on the west side of the river, until at the base of the "Llano Estacado," it disappears altogether. The mezquite, "*Algarobia Glandulosa*," is common to Western Texas and New Mexico. The small variety is a thorny bush which bears a long pod of small beans, nutritious for horses and cattle. The larger variety grows from 10 to 30 feet in height, and from four to ten inches thick; it has a distorted seagly appearance, and affords excellent firewood, giving a very great heat, and it is valuable for purposes of posts. The soil in this valley is good, but the rain is scanty, and irrigation will be required to ensure crops.

The Colorado River is about forty feet wide, and traverses the valley in a tortuous course. Limestone is abundant and other building material, but no timber large enough for building purposes, such as joist or

planking. The Llano Estacado is a high, nearly level, table-land; elevated, at its highest line, about 4,700 feet above the level of the sea, and about 500 feet above the headwaters of the Colorado of Texas. It is 200 miles in width at its widest point, and extends from the vicinity of the 30th to near the 35th parallel of latitude. It is 125 miles from the head of the Colorado to the valley of the Pecos, and is destitute of timber and water on its surface. Beds of dark-red sand, and patches of hard, pebbly ground with a thin layer of decomposed gypsum, alternate. For about 30 miles east of the Pecos the surface of the ground is hard, and covered with grama-grass—"Festuca Macrostachya." Beyond this there are patches of coarse bunch grass here and there. These grasses—the mezquite and the grama—of which there are several varieties—are most nutritious, and they can be propagated from seed, and in places supplied with necessary water might again be rendered valuable for stock. The name "Staked Plain" is derived from some Mexicans, who marked out a course over it, where there was some water at certain times of the year, in ponds; hence the name El Llano Estacado. During the middle of the day in summer, when the earth and adjacent strata of the air become heated by the almost vertical rays of the sun, an incessant tremulous motion in the lower strata of the atmosphere may be observed. This is mirage which so deluded the French army in Egypt, and is seen in perfection on the "Llano." Objects are magnified to an extraordinary size. A raven looks like a man walking, and an antelope like a man on horseback.

The eye may be gladdened by the appearance of a beautiful lake, with green and shady groves on the opposite

bank. So perfect is the illusion that he urges his horse forward, thinking it strange he does not reach the oasis. At one time he thinks he is getting close, but soon it appears as far as ever. Cattle and horses are never at fault in detecting the presence of water. In passing large herds of cattle across the "Llano," a start was made on a moonlight night, after watering the stock, and filling up barrels for the use of the party. Halts were made during the day, and forced marches by night. At length—miles off, the jaded and suffering beasts, which, with parched tongues, could scarcely stagger along, would detect their approach to water. Nothing can, then, stop them, and a mad rush is made, and woe betides the man who gets in their way. The water reached, they plunge in and drink till almost bursting. Mules can endure thirst much longer than horses or cattle. Some years ago a party of United States cavalry were subjected to fearful suffering (on the Jornada del Muerto, in Mexico), going for some weeks without water; having to kill their animals and drink their blood. Their guide having lost his way, they wandered about and could not find water. All the horses died of thirst, but none of the mules, and when rescued many of the men had died horrible deaths. The valley of the Pecos is from two to four miles wide at the 32nd parallel, and is bounded on the east by the Llano Estacado, and on the west by table-lands gently sloping into it. The bottom lands are level and fertile, and the river running generally in a south-east direction, traverses it in numerous sinuosities. For about thirty miles,—and fifteen below the 32nd parallel,—there are numbers of rapids; in many places with a fall of two or three feet. The whole valley of

the Pecos is well adapted to cultivation ; and, in common with the low lands of New Mexico, is most favourable for the cultivation of grapes, and other fruit, and irrigation is easy and inexpensive. The whole country is eminently adapted for stock, and the pasture of grama and mezquite grass, was at one time most abundant. With irrigation alfalfa can be grown, yielding many tons to the acre, in the several cuttings. The soil is, also, very favourable for the production of maize and cereals, and especially sweet potatoes. The river, though tortuous in its course, is navigable for small stern-wheeled steamers, from its mouth, to near the 32nd parallel.

The Texas Pacific Railroad crosses this river at Pecos City. The distance from New Orleans, *via* Marshall, and Fort Worth, is 769 miles. The valley of Delaware Creek, a tributary of the Pecos, has agricultural resources similar to those of the Pecos Valley, and can be easily irrigated. The creek itself is a succession of small lakes, ten or fifteen feet deep, connected by a swift running stream. There are some beautiful springs, some being mineral, and others pure water, one of which bursts out in a stream as large as a barrel. Some of the mineral springs are of sulphur, abominable in smell and taste ; but, strange to say, animals will sometimes prefer this to the pure.

Here is a good climate, with pure, bracing air, and mild winters ; and although the summers are marked by high temperature, the heat is never oppressive, owing to the dry atmosphere and constant breeze, and the nights are cool and refreshing. Twenty miles west of the head of Delaware Creek, the east base of the Guadalupe Mountains is reached. There is some pine timber in the

ravines and gorges along the east face of the mountains, and on the ridges to the south, dwarf cedar. From the valley of the Pecos west, about 128 miles, are elevated table-lands, too dry for cultivation, but at one time affording magnificent pasturage; with plenty of water in places, supplied by springs. This country was, not so many years ago, in undisputed possession of the Apache Indians, who ravaged the settlements in all directions, and drove off the cattle, but notwithstanding the danger, and constant enormous losses of stock, herds were driven there to replace those lost, only to share the same fate. The construction of the railways, and the consequent exodus of the Indians, led to the rapid settlement of the country, and enormous flocks of sheep and cattle so ate out the grass, that during years of exceptional drought, great damage was done to the ranges. The three ranges of the Guadalupe, the Hueco, and Organ Mountains, occupy the summits of these table-lands, and contain universal deposits of precious metals.

On the west side of the Organ Mountains, which bound the valley of the Rio Grande, valuable silver and lead mines exist. Abundance of game existed in this fine country, deer, antelope, and wild turkeys farther south in the mountains, and along the heavily-timbered river-bottoms; also innumerable quail, and good duck shooting is to be had on the ponds, along rivers and creeks; but so much hunting has been carried on, that it is impossible to designate any particular portion of the country where sport could now be enjoyed.

The Red River contains cat-fish, very good fish for the table. In the clear water tributaries of the Trinity and Brazos, on their upper waters, in the deep, rocky pools,



the striped-bass, a beautiful game fish, up to five lbs. weight, were abundant, and afforded excellent sport with the live bait, or spinner. A variety of perch, the sun-perch, are numerous ; also cat-fish, which are caught of a large size in the lower Trinity. The alligator-gar, often four or five feet long, runs up from the main Trinity, and preys upon the fish, and is a great nuisance to the angler ; nipping off his tackle with the greatest ease. The small, muddy tributaries are full of craw-fish, which are very good eating, and can be caught easily with a piece of meat on a string fastened over a net. Most of the clear tributaries of the Pecos, and other rivers south, contain the fishes before mentioned. Care should be taken in fishing to avoid the mocassin snake, a short, black snake, very poisonous. They generally drop into the water quickly, however, and there is not much danger of treading on one. The large water snake, growing six feet long, is abundant and destroys immense numbers of small fish. Rattle-snakes abound everywhere out of the timber, but can nearly always be heard and avoided. There is, however, a variety called the "ground rattle-snake" in Texas, having very small rattles, which give insufficient warning, and they are very poisonous ; found on the prairies only. In decayed timber, and around old log houses, centipedes, scorpions, and the tarantula, a huge spider, very poisonous and pugnacious, are found. Although bites and stings from these reptiles are of infrequent occurrence, it is advisable to be prepared for such an emergency when camping out, or roaming about the country. The following precautions will arrest the action of the poison. A stoppered bottle of strong ammonia should be carried, with

a small hard rubber syringe. When bitten, put on a ligature between the wound and the heart, close above the former; a cord or a handkerchief loosely tied round the limb, and twisted with a stick, tightly, will answer well. Suck the wound well, which, if there are no abrasions on the lips, can be done with impunity. Then inject ammonia into the wound, and drink a quantity of alcohol, in any form. In camping out, if the *hair lazos* used by the Mexicans are laid round the tent or couch, snakes will not pass them; the hair causing intense irritation to their skins. One of the largest snakes of North America, the "Pituophis," closely allied to the Heterodon, commonly called Bull, Pine, and Pilot, is found in this State. They grow ten or twelve feet in length, but are not poisonous, being of the constrictor variety, living on rabbits, and other small animals; and are not numerous. Ants, mosquitoes, and other pests abound in the lowlands; and in some parts of the timbered country north of the Red River, which is, however, in the Indian Reservation, there is a small tick which is a terrible scourge, invading the person in swarms.

The climate in summer in the central portion of the State is very warm, and in places sheltered by timber sometimes very hot, and during the prevalence of a drought the thermometer will range considerably over 100° at times; but with cool nights the heat is not exhausting. All along the Red River and its tributaries, and those of the Trinity and the Brazos, excepting the head waters and on the low prairies, intermittent and bilious fevers prevail, which in the vicinity of marshes or stagnant water are very severe, and occur

chiefly in the autumn, and are much worse in very dry seasons. The people take quinine to excess, with frequent doses of mercurial preparations which aggravate the evil and destroy their teeth. The winters east of the Brazos are, as a rule, mild, with occasional frost and sometimes a considerable fall of snow, and a fall of temperature as low as zero; but this is only for a week or so, and snow, usually, only lies a few days on the ground. There are sometimes heavy rains and floods, especially in the Trinity and the low country on the lower part of its upper division near Fort Worth; and from there all the way south the valley is inundated. "Northers" (a sudden cold wind storm) occasionally occur during the winter and spring season, but are not nearly so severe as those occurring in the southerly portion of the State. The whole north-east portion of the State is a decidedly malarious country, and comparatively few people escape an annual touch of ague or bilious fever. The high undulating country on the water-shed of the Trinity, and the plateaux extending north and west to the boundaries, with the whole country due west to the Rio Grande, is the healthiest and most delightful portion of the country. The almost constant cool and bracing breezes of the summer months, with the absence of anything like marshes or stagnant water, remove the sources of malaria and its attendant evils of autumn fevers, and the languor and depression of spirits which ensue; nevertheless, even the most favoured districts in the timbered portion of the State, and in the Rio Grande Valley, lower, are not entirely free from miasmatic fevers and bilious attacks. Much of this is, however, induced by errors of diet. Strange to say, the

people, to a great extent, live on maize flour bread, and bacon, with a great deal of fat—a diet more suitable to the Arctic regions than this latitude, in which wheat-flour, acid fruits, and fresh meat should constitute their food. Another injurious habit is that of drinking quantities of coffee, three times a day usually. In the country on the head-waters of the Trinity and throughout the “Cross Timbers” very heavy dews occur, saturating everything exposed. The whole country is now well settled, and there is no trouble from Indians, and law and order prevail to a great extent. Shooting and hunting in the Indian Territory, on the border of Texas, is now prohibited under a penalty of 500 dollars. Of the many tribes of Indians who used to frequent Northern Texas, the Wichitas, Wacos, Kechies, Quapasos, Chickasaws, and Choctaws, have long occupied the Indian Reservation. Some of the other tribes are extinct, and they were all held in contempt by the Comanches and Kioways to the west. They are civilised Indians now, and, in many cases, have acquired the vices of the white men in addition to their own. There are, however, many of them who are partially educated, and have made a good deal of money by farming and stock raising. Some of the half-breed girls are exceedingly pretty, and white men marry them to obtain privileges in the territory. Many of the Indians are superior to the whites amongst them, who are outcasts from society in the States.

It would be difficult to find a greater set of scoundrels than the white renegades of the Indian Territory, who, driven by their crimes to seek refuge there, were often the instigators of “Indian” outrages, and there can be no doubt that many of the marauding expeditions into

Texas were led by these men, and attributed to the wild Indians in the west ; of the latter the Comanches, and Kioways, the two most powerful and numerous tribes, occupy the country on the head waters of Red River. The Comanches, the finest horsemen in the world, are of medium stature, with bright, copper-coloured complexions and intelligent countenances, and, in many instances, with aquiline noses, thin lips, black eyes and hair, with a little beard, or moustache. Their dress consists of leggings and moccasins ; with a cloth wrapped round their loins. The body is generally naked above the middle, except in winter, when a buffalo-robe or blanket is a constant appendage to their wardrobe. The women are short, with crooked legs, and are obliged to crop their hair close to their heads. In addition to leggings and moccasins, a shirt of dressed deer-skin is worn. They tattoo their faces and breasts, and are not nearly as good-looking as the men. The men are haughty and dignified in deportment, and very vindictive when offended ; blood only can atone for an insult or an injury. The following incident will give an example of their horsemanship. A scouting party of United States cavalry once came suddenly upon a band of Comanches in a small opening in the post-oak timber, which is low and thickly branched, with much fallen brush. A charge was made, but the Indians, laying themselves along the sides of their horses, dashed into the timber and disappeared like a lot of wild turkeys, and pursuit was impossible. The women ride on the same kind of saddles, and in the same way as the men. Two young women once, seeing some antelopes at a distance from their camp, mounted horses, and with lazos in hand went in



pursuit. After pursuing some distance, with great judgment in riding, the lazos were cast and two antelopes brought back. They possess a large number of very fine horses, with remarkable staying powers, but comparatively few are fleet enough to capture the antelope. It has been noticed that stable-fed horses improve greatly in "wind" when subsisting entirely on grass, and the mezquite grass of these plains is the finest food in the world for them. Some of the other tribes of Indians are very fond of wearing articles of costume presented them by white men. On one occasion an Indian presented himself at the tent of an officer, escorting some cattle through the Indian Territory, in a novel costume. A dark shadow fell on the tent, and, "How," was the salutation which greeted the ears of the astonished officer, who beheld an Indian, clad only in a "breech-clout" (loin cloth), with a tall (stove pipe) hat and holding an umbrella over his head. When Indians get whisky it excites them to fury, and they "run-a-muck." Much injury has been caused by white traders supplying them with the abominable corn whisky of the country, which is done in spite of the precautions taken by the United States Government.

There is a beautiful country on the Rio San Pedro or Devil's River, having an altitude of 1,680 to 1,810 feet. This is a clear water stream, with deep holes and some splendid springs. It contains perch, bass (striped, erroneously called trout), and there is excellent duck shooting on the pools in the winter. From Eagle Pass ("Fort Duncan"), which has an altitude of 1,461 feet, to near the mouth of the Rio San Pedro, a distance of 68 miles along the Rio Grande, is one of the most fertile and

desirable portions of the Rio Grande Valley, both on the Mexican and the Texas side. On the latter, between Eagle Pass and the mouth of the San Pedro, the tributaries Las Moras, Piedras, Pintas, Locaté, and San Felipe flowing into the Rio Grande are all clear, beautiful streams. There is an extensive area of land in this region within water level, which can be readily irrigated, and all sub-tropical fruits and cereals can be raised on the bottom land, and the surrounding uplands are excellent pasture lands. The roads are good, having a naturally good foundation, and the climate is salubrious. The distance from New Orleans, *via* Southern Pacific Line to San Antonio, is 577 miles; San Antonio to San Pedro (Devil's River), 185 miles; Devil's River to Spofford Junction, 52 miles; Spofford Junction to Fort Duncan (Eagle's Pass), 35 miles; from Fort Duncan to the mouth of the Rio Grande is 495.65 miles by river; Fort Duncan to mouth of Rio Pedro, 71.12 miles; Rio Pedro to Rio Pecos, 41.48 miles; mouth of the Rio Pecos to El Paso, 694 miles, by the river. The distance from New Orleans to El Paso by Southern Pacific, *via* San Antonio, is 1,209 miles. The country between the Rio Grande and the Pecos is intersected by three ranges of mountains, nearly parallel, with a general direction north and south. The first of these, the Organ Mountains, commences on the east side of the Rio Grande, one mile north of El Paso, and extends northward along the east side of the "Jornada del Muerto," until it unites with the immense ranges of the Rocky Mountains extending to the north. Next to the eastward are the Hueco Mountains, 24 miles from the Rio Grande; this ridge unites itself with the Sacramento and White Mountains,

which, continuing to the north, are lost in the main chain of the Rocky Mountains. The most easterly range is that of the Guadalupe Mountains, 108 miles from the Rio Grande, and 54 miles west of the Pecos. The altitudes of the passes of these ranges are as follows: Organ Mountains, 5,467 feet; Hueco Mountains, 4,811 feet; Guadalupe Pass (one of the lowest), 5,717 feet. The intervals between these ranges along the line of railroad are occupied by high tablelands, so that the altitude of the mountains above the plains is not great. Between the Rio Grande and the Hueco the mean elevation is 3,963 feet. The second plain is more elevated, but at its lowest point is 3,893 feet, and is, at its eastern side, near the Guadalupe Mountains. The slope of the plain, from the summit of the pass eastward, appears to be very gradual, and, with one or two exceptions, is remarkably regular. One of these exceptions is at the base of the Sierra de los Alamos, which consists of isolated mountains rising above the general level of the plain. The mean altitude of this plain is about 4,250 feet, and its western limit is the range of the Guadalupe Mountains, and beyond them to the east is the broad area of tablelands and semi-deserts reaching to the Cross Timbers of Texas. The geographical and geological features of this country, embracing all the country on either side of the Rio Grande, are of the highest interest. There is some grand scenery, and the pleasure afforded by journeys in various directions is great. In some portions of the valley of the Rio Grande in summer the dust is blind and choking, and the heat great, but on the high lands the breeze counteracts its effects by rapid evaporation.

The settlement and development of the resources of this country, embracing the whole of the Rio Grande border, was retarded for years by the ravages of the Indians, and the constant feuds arising between the Americans and Mexicans. The predatory incursions of the Comanches and Kioways, accompanied by renegade Mexican half-breeds, in which large droves of cattle and horses were driven off, and the inhabitants murdered, were of frequent occurrence. In addition to this, the raids made by filibustering Americans kept the border in a constant state of warfare. The Texans never forgot the inhuman treatment received from the Mexicans, during their war with the latter, and lost no opportunity of retaliating. The following circumstance, which is well vouched for, will show the daring and reckless character of some of the Americans engaged in these raids. One mild summer's evening a party of Americans, among them a retired officer of the filibusters, were enjoying the twilight on the bank of the Rio Grande, opposite a point where was usually posted a picket-guard, detached from a Mexican military station four miles distant. The guard of ten men were seen to approach the jacal, dismount, tie their horses, and stretch themselves on their blankets; some to sleep, others to smoke, but none particularly to watch. The conversation of the first-named party was rather of a jocular character, directed at the expense of the young American filibuster, who had joined in the Caravajal revolution, which had just been ended with such signal advantage to the regular Mexican troops. A little nettled, probably, at what had passed, he offered a wager of 100 dollars that he would cross in a boat and take the guard single-handed. His wager

not being accepted, he offered to bet "drinks for the party." Some person, not dreaming he was in earnest, indiscreetly took the bet.

The absence of the filibuster was scarcely noticed, and the conversation about other subjects had continued for nearly an hour, when it was interrupted by the sharp reports of a revolver, and a yell, which reverberated from shore to shore, giving the impression of many voices. These were quickly followed by the rolling of a platoon of musketry; and then all was silent.

"Could that be S——?" asked one. "Impossible," was the reply. "It would be just like him," said a third.

Shortly after, a boat containing two or three men was seen to dart across the rapid current, from the shadow of the high bluff on the American side. As it approached the opposite side, its occupants, not wishing to violate the usages of the guard, called out in Spanish they were "friends," going over to see what was the matter, "Matter! Hell!" answered a voice in English. "Come here and help me to drive these mustangs in the river." They found the guard dispersed, and S——with one arm shattered by a musket-ball; with the other he was trying to lead all the ten horses to the river-shore. There is a strip of public land, between the lines of Colorado and Kansas on the north, and Texas on the south, called "No Man's Land." It contains an area of 4,000,000 acres, and is watered by a tributary of the Canadian River, and contains some rich soil. There is a population of about ten thousand, consisting of cowboys, and outlaws who recognise allegiance to no law, and find it a sanctuary. There is now a bill before the Senate to provide a Government for this community, much to the



disgust of the population, whose business of cattle thieving, etc., will be much interrupted. Much of this region has been used as a cattle range. In former years, on the range in Texas, cattle stealing was common, and a rapid method of increasing a herd. Much of the herding was done on shares, the cowboys getting a percentage of the increase, for taking care of the herd. These calves they branded with their own marks; establishing, and recording a "brand." This formed the nucleus of a large herd, for, strange to say, the man who owned 20 cows could often find 25 or 30 calves belonging to them, which he proceeded to mark. The calves are at first marked on the ears, by slits, or notches cut out, and it was quite an art to obliterate another man's marks, and put in his own. One stock owner caused consternation by cutting off both ears as his mark, so that it was useless for others to put in fancy notches on one or the other ear, as both the marks and the ears were found removed.

The privilege of ranging cattle, free of cost, over all open Government lands in the United States has been enjoyed for years by the cattle barons, as they are called. The Government has permitted this for years, without directly authorising the practice. The actual settler, a man with very small capital, has found it difficult, in most cases, to range his small herd with any success in competition with the immense herds of cattle barons, who have hitherto had sufficient influence to prevent any hostile legislation. Having nothing to pay for the animals' food, they have been able to make fortunes, and at the same time so to crowd the eastern markets with an inferior grade of beef, as to keep prices down to a

point which is ruinous to legitimate stock-feeding. The demand for a superior quality of beef is confined to a small class of people, who may be called epicures here. As far as the majority is concerned, beef is beef, and the habit of bolting food, and little mastication, affords little time for any reflection on its quality, and as long as a sufficient quantity is supplied they are satisfied. It is now reported that the cattle barons will no longer be permitted to range their cattle on the Cherokee lands in the Indian Territory, and that, eventually, free grazing will be proscribed on all Government lands. Should Congress take this step it will put a stop to the business, to the great benefit of farmers, who can then produce beef of a superior quality at a price remunerative to themselves. Owing to the impossibility of competing with this cheap beef by farmers who own their land and pay taxes on it, the raising of cattle in the leading corn (maize) States has been almost abandoned, and cereals sold at prices scarcely paying for their production.

# NORTH CAROLINA.

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## GENERAL CHARACTERISTICS OF THE SOUTH.

THE increased values of productions in the South, of late years, is remarkable. The "Manufacturer's Record"

shows that in 1879 the value of agricultural productions was 571,000,000 dollars, and in 1888 it was 739,000,000 dollars. In 1880 the South had 220 national banks, and it now has 472. In the last four years 14,000 new manufacturing and mining businesses have been organised, and since 1880 its railways have increased 21,000 miles, for which 800,000,000 dollars have been expended. During the same period the assessed value of property has increased over 1,300,000,000, and the true valuation over 3,000,000,000 dollars. In 1880, 6,048,571 tons of coal were mined in the South, and in 1889, 18,000,000 tons. In the former year there were 161 cotton mills, and now there are 355; there were 40 cotton-seed oil mills, with a capital of 3,500,000 dollars; now there are 213, with a capital of 20,000,000. Capital has been pouring in from the North and other parts, and new enterprises are being projected in all directions; but it is chiefly in Alabama and Georgia that manufacturing interests have centred. Much excitement has ensued in the way of speculation in real-estate, with, in some cases, the inevitable reaction. A trouble which seems to menace the future prosperity of the Southern States is the "Negro Problem." The scheme to promote the emigration of the negroes from the South is absurd, and, if carried out, would paralyse the agricultural interests of the country, in which negro labour is absolutely necessary for its maintenance. The unlimited enfranchisement of the negro was a mistake. It placed in the hands of unscrupulous politicians a mass of ignorant and plastic voters, who have been manipulated by party politicians. A barrel of whisky would influence a considerable number of such votes. Ever since the Emancipation

Republican politicians have been tampering with the negro and using him as a weapon in the political arena. If the negro had been let alone by those vindictive Republicans of the North, who have never ceased to set him against the people of the South, the present difficulty would not have arisen in all probability.

The tax-books of the State of Georgia show that the negro, 25 years ago a slave, has in that State alone 10,000,000 dollars' worth of assessed property, worth twice that much actually. This is a good showing for the financial prosperity of the negro. The people of the South understand how to manage the negro much better than outsiders, and naturally object to having their elections controlled by them, at the instigation of Republican agents. The negroes are well treated generally in the South, but acts of hostility or insolent behaviour towards the whites meet with prompt retaliation. The criminal records show frequent crimes of the greatest atrocity committed by negroes, which are followed by very summary punishment under Lynch law. The only excuse that can be offered for this illegal procedure is that criminal prosecutions so often fail. Party political influence can be so used that the course of justice can be diverted, and, no matter how strong the evidence may be, a conviction cannot be depended upon. In the cases of such white desperadoes as are occasionally captured and brought to trial, the fear of the vengeance of the friends of the prisoners either leads to an acquittal on some technicality, or to a sentence utterly inadequate to the offence. Personal encounters marked by a reckless disregard for life are also of frequent occurrence in all classes of society, especially in the State of Kentucky,



and so serious has this evil become, that it is now probable that the sentiment of the people will lead to the adoption of some strenuous repressive measures. "The Louisville Courier-Journal," commenting on this subject, remarks: "Just now we are trying to discover a remedy for the reckless disregard of life that characterises the whole State of Kentucky. But the reckless disregard of the provisions of the city charter at home are just as worthy of consideration. We complain because the feuds in the mountains deter capitalists from investing in Kentucky; but the lawlessness of municipal officers, which has become common in Louisville, is just as injurious to the welfare of the city."

Lawlessness and corruptibility, more or less, will be found in most cities in the United States, and no prejudice should be formed against any of the Southern States in this respect. Southerners are hot-blooded and quick to resent an affront, and too fond of taking the law in their own hands, but they are generous and hospitable, and are not prejudiced against Englishmen, and those who are not fanatical champions of the negro will find their social relations agreeable.

A place which is destined to be an important manufacturing centre, is Middlesborough, in Bell County, Kentucky. This newly-established town is situated in the Cumberland Gap at the junction of the States of Kentucky, Tennessee and West Virginia, in a beautiful valley four miles in length, by three-and-a-half in width. This valley is level and contains about 6000 acres of fertile soil, and is surrounded by mountains, covered with valuable timber, and rich in coal deposits. The Cumberland Gap Association, composed of English and

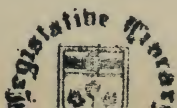
American capitalists, own about 60,000 acres of mineral and timber lands, and in all probability a large city will arise here, for it has already become a railroad centre, and new lines are proposed. This will afford a good and increasing demand for agricultural produce, and greatly increase the value of farming land in the district. The climate in summer is very warm, in the valleys and places sheltered from a breeze, the thermometer ranging to 100° at times, and malarial and bilious fevers occur at certain seasons. During the winter the weather is very pleasant and mild. In elevated situations on the Cumberland Mountains the climate is good all the year, and much the same as in North Carolina at corresponding altitudes, and it is in this State that the best opportunities for investment will be found, as there is an immense area of uncultivated lands, and various other resources capable of development.

## NORTH CAROLINA.

THIS State lies between the parallels  $34^{\circ}$  and  $36^{\circ}30'$ , north latitude, and between  $75^{\circ}30'$  and  $84^{\circ}30'$ , west longitude.

The State is  $503\frac{1}{4}$  miles in length from east to west, with a coast line of 314 miles. The Western Division, which has by far the healthiest climate, is mountainous, and consists of about one-fifth the area of the State—10,000 square miles. It consists of a narrow ridge of mountains, and a plateau, in breadth some 20 to 50 miles, with a length of 200 miles; and ranging north-east and south-west, between the parallel ranges of the Blue Ridge and the Smoky Mountains. This plateau is the most elevated region of the United States east of the Mississippi. Some of the mountains have an elevation of over 6,000 feet. Mitchell's Peak, on the Black, is 6,700 feet; and Chugman's, on the Smoky Range, 6,600. The plateau is sub-divided into minor plateaux or basins, surrounded by mountains. The Blue Ridge, which bounds this plateau on the east, with an average elevation of 3,000 feet, separates it from the middle region of the State, which may also be described as a low plateau, whose western side, at the foot of the Blue Ridge, has an elevation of from 1,000 to 1,200 feet, and is intersected by many spurs of that chain, 2,000 and 3,000 feet high, and many of them 20 or 30 miles long, and as high as the Blue Ridge. This region slopes gradually towards

the east, maintaining an elevation of 600 to 800 feet for 150 miles; forming the Piedmont and hill country of the State, extending 200 miles, with an area of over 2,000 square miles. The eastern section lies on the sea-coast, and extends inland about 120 miles, and is, for the most part, comparatively level, but rolling and hilly towards the west, and also contains about 20,000 square miles. Towards the coast the country is broken by sounds, bays, and lakes, communicating with some large navigable rivers, which, with canals, form a system of water communication with the eastern and middle sections of the State. There are seven large rivers flowing east (to south-east) through the eastern and middle divisions of the State, besides numerous smaller streams, which furnish fine water-powers through the middle section; and, in the eastern, together with the bays and sounds, they give an aggregate of more than 1,000 miles of inland navigation. West of the Blue Ridge, there are seven other large rivers, which flow westward into the Ohio and Mississippi; the largest being the Tennessee, which is navigable from the western boundary of the State for a 1,000 miles to the Mississippi. The Roanoke, one of the largest—rising a little north of the boundary, and running along it in an easterly direction—is navigable to Weldon, about 100 miles from its mouth. Tar River is navigable to Tarboro, 110 miles from the sound. Neuse River is navigable to Goldsboro, 100 miles from the sound. Cape Fear River is navigable to Fayetteville, 140 miles. These last three rivers rise in the middle region of the State, and have a south-east course wholly within its territory. There are many other rivers—some of them tributaries of those already described—



which attain considerable volume. Some of them—in the eastern section—are broad and navigable streams; the Chowan, for example, beyond the boundary of the State; and Pungo, Alligator, New River, North-east Cape Fear River, Black, Waccamaw, and Lumber Rivers; and others of less importance. Beyond the Blue Ridge the rivers all flow north-west to the Mississippi, except New River, which leaves the State in a north-east course, and flows into the Ohio. The estimated water-powers, developed by the fall of these streams from the table-lands and plateaux to the sea, aggregate about 3,000,000 horse-power. The Roanoke, at a point some fifty miles above Weldon, develops a force of more than 300 horse-power per foot of fall; and there is a fall of 100 feet from Gaston to Weldon, aggregating some 30,000 horse-power. The Yadkin, near Salisbury, gives 300 horse-power per foot. The Catauba (near Hickory) gives nearly 250 horse-power per foot; and 10,000 for a single fall at Mountain Island, 12 miles west of Charlotte. The Cape Fear gives an aggregate of 125,000 horse-power; 12,000 at Smiley's Falls, twenty-five miles above Fayetteville; about 40 per cent. more than is found in Massachusetts, at Lowell, or Lawrence. Beyond the Blue Ridge many of the rivers, of equal volume, and much more rapid descent, give much larger aggregates within shorter distances. The French Broad River, from Ashville to the State line, gives not less than 120,000 horse-power within a course of 50 miles; and the Nolichucky exceeds that considerably. There are numbers of other water-powers in various parts of the State. The principal sea-ports are Wilmington, Beaufort, and Newbern, within the State; and Norfolk, near the



northern line, derives a large portion of its business from this State.

Marl is found only in the eastern section, but is abundant in some twenty-five counties; occurring in extensive beds, and easily accessible. Iron-ore of every variety is distributed over a wide area from the head of navigation on the Roanoke, being found in workable quantities in about thirty counties.

The coal is bituminous. There are two beds, one on Deep River in Chatham County, the other on Dan River (upper waters of the Roanoke) in Rockingham and Stokes Counties. The thickness of the working seams ranges from three to seven and one-half feet. Limestone exists, but is not abundant. Building-stone, granite, marble, and black, white, red, mottled, brown, and grey sandstone, abound everywhere. Timber—The United States census tables for 1870, give an area of 40,000 square miles of the 50,000 square miles of its territory, as still covered with forest. Among the most distinctive, abundant, and valuable species, are the pines, oaks, hickories, cypress, and juniper. Pines are the predominant growth of the eastern section. There are eight species in the State, the most important being the long-leaf, the yellow, and the white. The long-leaf pine is found only in the eastern or sea-coast region; the yellow-pine abounds throughout the State; the white-pine is limited to the higher mountain regions. Of hickory there are seven species, and it is much used for firewood as well as for waggons and tool handles. Walnut ("black") is most abundant in the middle of the State. Cypress abounds in the swamps and lowlands, forming the almost exclusive growth of several

thousand square miles of the territory. It is much used for shingles for roofs, like the cedar of the Pacific Coast. Maple, birch, beech, poplar, and other kinds of trees are found. A large portion of the best of the timber lands has been bought by mill companies, and speculators, and timber lying near streams, affording rafting facility, is well cut out.

The cabinet-woods are worthy of mention; they are the black-walnut, the red-cedar, black-birch, wild-cherry, curly, and bird's-eye-maple, and the holly. Of the twenty kinds of timber used in the ship-yards of New York, nearly all are found in the forests of this State. The soil in the eastern section of the State is generally sandy, of little depth and natural fertility, with occasional ridges very sandy and sterile. The rich land is principally an alluvial, or a clayey loam of great depth; confined to the valleys of rivers, and the flat lands intersecting or surrounding the bays, sounds, lakes, and creeks. The swamp lands, with a dark peaty soil of great depth, are of great fertility when drained, which, however, would probably be attended with too much expense and difficulty for individual enterprise in most cases. In the middle and western districts—the region of the predominant oak growth—the soil is an argillaceous, gravelly loam, except the river valley-land, which is argillaceous, sandy loam. The soil varies very much in quality. The mountain sections are covered with timber to their summits in most instances, and are also covered with soil, in some places good, and in many thin and gravelly. A considerable portion of this mountainous region is elevated table-land, undulating, and in many cases not too broken for cultivation, or too

rocky, and in many sections one may travel miles without seeing a stone. It is only about the tops of the higher mountains that rocky precipices are found. On ascending some of these mountains, occasionally on their sides, flats of level land containing several hundred acres in a body are found. The top of the Roan, the highest mountain (except the Black) in Yancy County, is covered by a prairie flat for ten miles suitable for cultivation, and especially pasture-land. The ascent to this mountain is so gradual that one can ride to the top on horse-back, from almost any direction. The same may be said of other mountains.

Mitchell County is a continuation of the southern Appalachian plateau, and, with Yancy County, occupies the basin of the Nolechucky or Toe River, which drains the highest masses and summits of the Blue Ridge and Black Mountains. On its northern border the Smoky Mountains reach an elevation of 6400 feet, and the Blue Ridge, which forms its south-eastern boundary, has an elevation ranging from 3000 to nearly 6000 feet. Its surface is for the most part very rugged and broken, having an average altitude of 3000 feet. The mountains of this county, as well as those of other parts of the plateau, are generally covered with heavy forests of oak, chestnut, and pine, with a mixture, here and there, in the coves and on the higher slopes, of white pine, hemlock (*Abies Canadensis*) and black birch; while the lower slopes are covered with linden, sugar-maple, poplar, walnut, cherry, ash, etc. The oak and most of the timber is, as a rule, small, varying with the depth of the soil, which is in many places thin and gravelly. The sides of the Roan, the Black and other mountains, at an

elevation even of five or six thousand feet, are covered with a fairly deep, rich, vegetable mould, so soft, that a horse in dry weather often sinks to the fetlock, and it seems the soil is even more fertile as one ascends. The higher portions of the mountains are commonly covered with clouds, and vegetable matter being kept in a cool, moist state, while decaying, is incorporated to a greater degree with the surface of the earth; just as it is found that the north sides of a hill are richer than the portion most exposed to the sun. The sides of these mountains being comparatively destitute of undergrowth, with fair sized timber, are, in many places, suited for pasturage. The soils of the county vary in composition, and belong to the general region of oak-upland soils, being for the most part gray and yellow argillaceous, gravelly, and sandy loams, generally of no great depth, and in many places thin. Its area is 401 square miles; woodland, 105,586 acres; cultivated, 31,975 acres; in cotton, 15 acres; tobacco, 77 acres; oats, 3990 acres; buckwheat, 378 acres. Population, 9435—white, 8932; coloured, 503. Aggregate value of real property is 364,037 dols.; personal property, 119,485 dols.; total, 483,522 dols. State taxes, 16,538 dols.; county taxes, 3,494.02 dols.; school taxes, 2,655.40 dols. Live stock—Horses, 1094; mules, 321; cattle, 3521; hogs, 6810; sheep, 3964. The total area in acres being 256,640, there is a large amount of land uncultivated, but the choicest parts have already been selected and cultivated. The average production of cotton on the 15 acres noted is low, only 0.40 of a bale per acre. The roads are few and very rough, and, in many places, mere bridle paths.

Yancy County is much the same as Mitchell in its

general features. The massive spur of the Black Mountains rises in the middle of its southern end, and projects northward almost to the centre of the county. Between this mountain spur and the Blue Ridge, is a deep, narrow valley, in which rises and flows South Toe River; and on the west, in a similar gorge, Caney River, another of the confluent of the Nolichucky. The county is bounded on the south-west by a cross-chain from the Blue Ridge to the Smoky Mountains, which, through a considerable part of its course, reaches an elevation of over 5000 feet. The whole of this county is very rugged and mountainous, and the larger part of its surface only adapted to grazing; but in the valleys, and intervals between the mountain spurs and ranges, are areas of undulating and hilly land, and occasional tracts of considerable extent of bottom land. Mica mining is carried on both in this and Mitchell County. Above 5000 feet, the principal growth of timber on the Black Mountains is two species of fir or spruce.

Many lumber mills have been lately established and immense quantities exported. The population is 7694—white, 7369; coloured, 325. Area 276 square miles; woodland, 109,776 acres. Cultivated lands are only 19.65 per cent. of the county area; or 34,703 acres. Area planted in tobacco, 84 acres; corn, 11,200 acres; wheat, 3940 acres; in rye, 1290; oats, 3657 acres. State taxes, 110.53 dols.; county taxes, 5,084.46 dols.; school taxes, 2,017.04 dols. Live stock—Horses, 1077; mules, 595; cattle, 4824; hogs, 7326; sheep, 4338.

Madison County, with Buncombe, Henderson, and Transylvania, make the plateau or basin of the French Broad River; the largest of these natural sub-divisions



of the plateau. It is bounded northward by the Smoky Mountains, and its surface is very rugged and broken, being not only surrounded by massive chains of mountains, but crossed and cut up by heavy spurs of those principal chains. Its forests, soil, and agricultural productions are like those of preceding counties, except that yellow tobacco leaf is its most important crop, nearly reaching 1,000,000 lbs. The population is 12,810; white, 12,351, coloured, 459. Its area is 457 square miles—including 157,618 acres of woodland. Cultivated lands, 57,490 acres, or 19·66 per cent. of area. There are 1,626 acres in tobacco, giving an average of about 624 lbs. per acre (which is a low one).—Buncombe County occupies the middle portion of the French Broad Valley. Its eastern border lies upon the summits of the Blue Ridge and Black Mountains, and its western upon the summits of the cross-chain called the Newfound Mountains. The valley of the French Broad here is a wide, open basin, with considerable tracts of undulating and hilly land, and moderately mountainous tracts; while along its margin, on every side, are heavy mountain spurs. The average elevation of the French Broad plateau is about 2,500 feet. Agricultural products the same as other counties. Population 21,909; white, 18,422; coloured, 3,487. Area, 614 square miles. Woodland, 226,454 acres. Cultivated lands, 19·75 per cent.

Ashville, the capital, built on the side of a mountain, and containing, perhaps, half the population of the county, is a fashionable resort during the summer for people from various portions of the States, and especially the south portion of North, and that of South Carolina. Many of the southern planters and merchants have built

their summer residences in this, and Henderson, the adjoining county ; and there is good society for eligible persons with proper introductions.

Ashville is the centre of two lines of railroads, the "Western North Carolina" and the "Ashville and Spartanburgh," the former of which extends to Salsbury Junction on the "Piedmont Air Line," by which line Ashville can be reached from New York in 24 hours ; *via* Baltimore and Washington. Owing to the lack of a proper system of sewerage, typhoid fever has prevailed to a considerable extent, and the water is not good. Every effort has been made to suppress these facts. There is one large good hotel, the "Battery Park."

Henderson County adjoins Buncombe on the south, and its topographical features are very similar to those of the latter, except that there are broader areas of comparatively level and undulating lands. There is a considerable area of bottom and swamp lands ; that on the French Broad River being extensive and fertile, but subject to overflow. The soil is considered less fertile, on the whole, being a light-grey, gravelly loam, very thin in many places. There is a mixed growth of small timber, consisting of oak, pine, hemlock, and chestnut.

Hendersonville, the capital, about 22 miles from Ashville, on the "Ashville and Spartanburgh Railway," is very prettily situated. Ashville, although inferior in some respects as a sanatory, has monopolised the business of catering for summer tourists in the district, and Hendersonville is a dull place, composed of small, frame (wooden) houses ; it is a mere village, but situated in a pretty country, at a little less altitude than Ashville. South of Hendersonville a few miles is the settlement

of Flat Rock, which consists of a number of pretty villas, and some moderately sized mansions ; the summer residences of southern families, who have their own Church, and form an entirely separate community in the county. There are a few English settlers in Henderson County. Transylvania County occupies the upper portion of the valley of the French Broad River, and is bounded on the west by a heavy cross-chain from the Blue Ridge to the Smoky Mountains, called the Balsam Mountains ; having generally an elevation of 6000 feet. This is, therefore, the most elevated portion of the plateau of the French Broad.

It is very mountainous and rugged. There are some extensive tracts of land along the tortuous course of the French Broad River, reaching often a breadth of one to two miles ; which are very fertile, and produce large crops of maize, but some parts are subject to overflow. The larger portion of the country is suitable for grazing only. Timber is about the same as in other counties.

Population, 5,340—white, 4,823 ; coloured, 517. Area, 382 square miles ; woodland, 77,815 ; cultivated area, 17,967 acres ; (7.35 per cent).

Haywood County occupies the basin between the parallel cross-chains of the Newfound and the Balsam Mountains, which lie at right angles to the main chains, (the Blue Ridge and Smoky) at an average distance from each other of about 20 miles. This basin is drained by the waters of Pigeon River, one of the tributaries of the French Broad, which enters it beyond the Smoky Mountains in Tennessee. This county is hemmed in on all sides by high mountain chains of 3,000, 5,000, and 6,000 feet above sea-level. There are some tracts of

open, moderately hilly lands along the water courses, and occasional wide stretches of fertile bottoms, especially on the upper tributaries of the river, and near the middle of the basin. The average elevation is above 3,000 feet. The soils are of the usual description, and are above the average fertility. It is one of the best grazing sections, and produces all the grain crops of the region, including rye and buckwheat, but, as yet, little tobacco. The mountains are clothed to their summits with forests of the various species of trees. Population, 10,271—white, 9,787; coloured, 484. Area, 582 square miles; woodland, 115,632 acres. Area under cultivation, 40,474 acres; (10·87 per cent.). Tobacco, 100 acres; maize, 17,254 acres; wheat, 10,054 acres; rye, 757 acres; oats, 4,099 acres; and buckwheat, 633 acres. Value of real and personal property in the county, 1,574,686 dollars. Horses, 1,729; mules, 675; cattle, 8,588; hogs, 10,794; sheep, 7,643.

Jackson County is similar to Haywood County, but is more rugged, and has less bottom and valley land. It occupies the basin of the Tuckasegee River—a tributary of the Tennessee—and lies west of the Balsam Mountains, being bounded by the Cowes cross-chain on the west, and extends south to the Blue Ridge; and includes a high plateau, beyond it, of nearly 100 square miles, with an elevation of from 3,500 to 4,000 feet above sea-level. The country is well adapted to the production of grass. The soils, forests, and productions, are similar to those of Haywood. Mica is mined in the county in many places, and gold is found, in very small quantities, on the plateau south of the Blue Ridge. The population is 7,343;—white, 6,591; coloured, 752. Area, 532 square miles;

woodland, 136,317 acres. Cultivated lands, 28,606 acres; (8·4 per cent.). Cotton only averages 0·38 of a bale per acre. Value of real and personal property, 703,205 dols. State taxes, 121·40 dols.; county taxes, 5,504·82 dols.; school taxes, 1,988·65 dols. Horses, 1,042; mules, 540; cattle, 5,821; hogs, 9,146; sheep, 4,907. Macon County occupies the valley of the Tennessee River, which flows through its centre from beyond the Georgia border on the south, towards the Smoky Mountains. There is a wide, open valley, along which are considerable bodies of comparatively level and hilly lands, with extensive bottoms along the river and its principal tributaries, recalling, in its general features, the basin of the French Broad, though much less extensive. The country is better adapted to the cultivation of cereals, and has a larger area, capable of such cultivation, than the neighbouring counties; but a large part of the county is very mountainous, being hemmed in on all sides by high mountain ranges. Along its western side lies the massive chain of the Nantehaleh Mountains, with its numerous heavy, rugged spurs; and on the western margin is a deep cañon, drained by the river of the same name. There are two notable plateaux in the south end of the county, on the summit of the Blue Ridge; one on the headwaters of the east fork of the Tennessee, and the other on those of the Nantehaleh; both of them ranging from 3,500 to 4,000 feet in altitude. The larger part of the county is, therefore, better adapted to grazing than to anything else. The soils and forests are the same as those described. Mica mining is carried on, and there are also considerable deposits of iron-ore; and the only extensive or profitable "corundum mine" in the



State is found here. A railway has recently been graded across the northern end of the county. The population is 8,064—white, 7,395; coloured, 669. Area, 539 square miles; woodland, 170,170 acres. Cultivated lands, 32,630 acres. Live stock—horses, 1,322; mules, 786; cattle, 6,918; hogs, 11,020; sheep, 7,492.

Cherokee County occupies the extreme western corner of the State, of which it includes the whole breadth, at this point less than 20 miles. It is bounded, in part, on the north by the Smoky Mountains, and touches the States of Tennessee and Georgia on the west and south. The valley of the Valley River is open and comparatively level, nearly 20 miles long, and from three to five miles broad, and contains a proportion of good lands. There are considerable deposits of iron-ore, and a great variety of coloured marble on Valley and Nantehaleh Rivers. The soil and timber are much the same as in other counties. Population, 8,182—white, 7,796; coloured, 386; area, 470 square miles; woodland, 149,156. Cultivated lands, 28,603 acres. Live stock—horses, 959; mules, 460; cattle, 6,381; hogs, 8,241; sheep, 7,016. State taxes, 106·40 dols.; county taxes, 7,379·34 dols.; school taxes, 2,029·83 dols. Total value of real and personal property, 955,463 dols. Swain County lies north of Macon and Jackson, along the waters of the Tennessee River, and on the sides of the Smoky Mountains on the north, which here reach their highest elevation of nearly 6,700 feet. With exception of some open valley-land tracts near its centre, along the before-mentioned river and its tributaries, the territory of this county is exceedingly rugged and broken, and the proportion of cultivatable land very small. It is heavily timbered,

even to the highest summits of the Smoky Mountains. These summits furnish good natural pasturage. A railroad has been graded through its middle section, and will soon develop an extensive lumber business. Population, 3,784—white, 3,234; coloured, 550. Area, 445 square miles; woodland, 107,825; cultivated land, 13,828 acres; (4·86 per cent. of its area). Total property value, 503,222 dols. State taxes, 115·86 dols.; county taxes, 4,666·29 dols.; school taxes, 1,291·65 dols. Stock—horses, 548; mules, 199; cattle, 3,210; hogs, 4,375; sheep, 3,192.

Alleghany County is situated on the Virginia border and is bounded southward by the curves of the Blue Ridge. In its middle section is a parallel and higher chain. Its entire surface is drained northward into the New and Kanawha Rivers; this, with Ashe and Watanga Counties, constituting the New River basin; the only part of the State drained by the Ohio. It lies on the north-eastern end of the long, narrow, elevated transmontane plateau, and has an average elevation of not less than 2,800 feet. Its forests are of oak, chestnut, and pine. Its soils are common grey and yellow upland loams. Along the banks of the New River and its principal tributaries, especially Little River, are considerable tracts of bottom lands. Its agriculture is divided between grain, grasses, and cattle-raising. Its population is 5,486—white, 4,967; coloured, 519. Area, 276 square miles; woodland, 74,859 acres. Cultivated land, 46,198 acres (26·15 per cent.). Cattle, 4,822; sheep, 5,067. Ashe County lies in the north-western corner of the State, adjoining the States of Virginia and Tennessee; its south-eastern edge resting upon the summits of the

Blue Ridge Mountains. It is very rugged and mountainous, the spurs of the Smoky Mountains being thrust out almost across its entire territory, and reaching at various points an elevation of 5,000 feet; giving an average elevation of 3,500 feet. It is drained by the two forks of New River, which meet in its north-east corner. Its forests, soil, and agriculture, resemble those of Alleghany, and the whole transmontane plateau. Population, 14,437—white, 13,471; coloured, 966. Area, 370 square miles; woodland, 165,973 acres. Cultivated, 70,207 acres. Cattle, 12,005; sheep, 13,236.

Watanga County occupies the whole breadth of the narrower part of the transmontane plateau, being bounded for the most part, north-westward, by the Smoky Range, and south-easterly by the Blue Ridge. It is traversed in a northerly course by two massive cross-chains, connecting the summits of the Blue Ridge and Smoky Mountains, the Rich Mountains, and the chain of Hanging Rock, and Beech. Its average elevation is about 3,500 feet. Its whole surface is rugged and mountainous, with the exception of a few limited tracts along the principal rivers, where considerable valleys open out, with occasional stretches of bottom land. It is very similar to Ashe in many respects, but on its high-levels and benches are the best grass lands in the State, and cattle-raising is extensively adopted. Population, 8,160—white, 7,746; coloured, 414. Area, 370 square miles. Cultivated land, 44,753 acres. Cattle, 7,099; sheep, 8,941.

Clay County, on the southern border touching the State of Georgia, resembles Macon County. Area, 189 square miles; cultivated, 12 per cent.

Graham County, lying south of the Tennessee River, resembles Swain, but has a lower elevation, and no fir timber. The counties mentioned form the "Transmontane Region of North Carolina."

Rutherford County lies between Henderson, Cleveland, and McDowell. Its northern half is, in many places, quite rugged and mountainous (being, properly, a part of the Piedmont division), and its north-western corner rests on some of the summits of the Blue Ridge at an elevation of nearly 4000 feet. Its soils and its agriculture are much the same as already described. There is no railroad in the county, but a branch of the Carolina Central, from Shelby, in the next county east, is projected to Rutherfordton, the capital of the county. At present, the only communication is from that point, and stations on the Ashville and Spartanburgh line, which passes through Henderson County. There are some very pleasant situations, both in Rutherford and Henderson Counties. Forty-six miles E.S.E. from Ashville, and twenty miles S.S.W. from Rutherfordton, high on the acclivity of the Tryon Mountain, is a bench of land enjoying exceptional climacteric advantages. At night, generally, there is a pleasant breeze, and for several miles along the mountain there is seldom any dew to be found, and it is very rare for frost to occur, except in winter; and when the whole country above and below is covered with sleet, along this mountain-side there is none. Grapes do exceedingly well, and some of the heaviest crops of wheat and rye in the country are raised. On the eastern side of this mountain is the earliest pasturage in spring, and the latest in autumn, found in the whole range of mountains.

Thousands of persons visit this region in the summer, to enjoy the cool breeze, which on the eastern side of the mountain is dry and healthy; but farther back in the mountains of the French Broad, there is much dampness and heavy fogs. The population of Rutherford County is 15,198—white, 11,910; coloured, 3288. Area, 520 square miles; woodland, 180,192 acres; cultivated land, 63,825. Planted in cotton, 9679 acres; giving 2079 bales; average, 0·21 per acre. Maize, 32,783 acres; wheat, 8683 acres; oats, 6166 acres; rye, 689 acres. Real and personal property, 1,555,657 dols. State taxes, 218·07 dols.; county taxes, 19,158 dols.; school taxes, 4,264·98 dols. Cattle, 7080; sheep, 5714. Cleveland County, east of Rutherford, rests its northern end on the summit of the South Mountains, at an elevation of nearly 3000 feet, and is drained by several large tributaries of the French Broad River. Its soil is very similar to that of other counties. Gold mining is carried on in both these counties (“Rutherford and Cleveland”) to a limited extent. Population, 16,571—white, 13,700; coloured, 2871. Area, 464 square miles; woodland, 129,115 acres. Land cultivated, 85,752 acres; in cotton, 19,238 acres, averaging 0·32 of a bale, per acre. Corn, 31,339 acres; wheat, 11,116 acres; oats, 10,959 acres. State taxes, 599 dols.; county taxes, 15,255 dols.; school taxes, 5,078·44 dols. Cattle, 7006; sheep, 5936. Aggregate property, 3,299,252 dols.

McDowell County lies on the eastern flank of the Blue Ridge near its highest parts, which exceeds in this region an elevation of 5500 feet, and its whole territory is mountainous, and its average elevation 1500 feet. It is drained by the Catauba River, along which and its



chief tributaries are wide tracts of productive, sandy and alluvial bottoms. The uplands are as before described, and with a reddish-clay loam soil, streaks of which occur in nearly all the counties described. A large portion of the soil is adapted to the cultivation of the better grades of tobacco, and it has the advantage of having abundance of limestones in the northern and middle sections. There are gold and mica mines in the South Mountains. There is a large amount of valuable timber on the slopes of the Blue Ridge, and an indefinite amount of water-power. Iron ores of a low grade are abundant. The Western North Carolina Railway runs through the county. Population, 9836—white, 7936; coloured, 1897. Area, 545 square miles; woodland, 122,129 acres. Cultivated lands, 34,798 acres; cotton, 23 acres; tobacco, 100 acres; maize, 17,675; wheat, 6397 acres; rye, 1360; oats, 1690. Average of cotton per acre, 0·39 of a bale. Real and personal estate, 808,274 dols. State taxes, 189·29 dols.; county taxes, 10,559·85 dols.; school taxes, 2,6380·4 dols. Cattle, 5125; sheep, 3125.

The counties in which rice is cultivated are as follows:—Beaufort, Bladen, Brunswick, Caldwell, Cameron, Carteret, Cleveland, Columbus, Craven, Cumberland, Currituck, Dare, Green, Hyde, Johnson, Jones, Lenoir, Lincoln, Martin, New Hanover, Quelaw, Pamlico, Pander, Pitt, Richmond, Robeson, Sampson, Wayne, Tyrrell. Area, 10,846 acres; produce, 5,609,191 lbs.; 517·16 lbs. per acre.

The principal cotton-producing counties are:—Anson, Beaufort, Berlie, Cabarrus, Chatham, Cleveland, Craven, Cumberland, Duplin, Edgecombe, Franklin, Gaston, Green, Halifax, Harnet, Hertford, Iredel, Johnson, Jones,

Lenoir, Richmond, Robeson, Sampson, Wayne, Tyrrell, Martin, Mecklenburgh, More, Nask, Northampton, Pitt, Richmond, Rowan, Wake, Warren, and Wilson. The number of acres in rice is 10,846 and the production is 5,609,191 lbs., or  $517\frac{1}{3}$  lbs. per acre.

The area in cotton is 893,153 acres, and the produce 389,598 bales, an average of  $\cdot 43$  of a bale per acre.

The chief tobacco-producing counties are Rockingham, with 4,341,250 lbs., and Caswell, Granville, and Person, with from 3 to 4,000,000 lbs. Other principal counties are Alamance, Davidson, Davie, Forsyth, Iredel, Madison, Orange, Stokes, Surrey, Warren, etc. Area in tobacco, 57,208 acres; production, 26,986,213 lbs.; average per acre, 417.17 lbs.

The successful cultivation of tobacco requires a rich and deep soil, with the addition of an abundant supply of fertilisers. The following notes on the culture of tobacco are from one of the most successful and experienced agriculturists in the States. The most valuable grade of tobacco now grown in the United States, is produced in a portion of the Susquehanna Valley, in Pennsylvania, in Connecticut and Kentucky. Havana seed is used; the tobacco being darker and stronger than the light-coloured leaf of North Carolina, which, however, is much milder and pleasanter for smoking tobacco. The land on which the Havana seed-tobacco is grown in Pennsylvania is valued at 200 dollars per acre, at least, and in some places as high as 300 to 350 dollars per acre. The crop on ten acres gave a gross return of 240 dols. per acre, yielding 1500 lbs. of tobacco, which is at the rate of about 15 cents per lb.

The expenses of cultivation, together with an allowance of 40 dollars per acre for manure, amounts to one-half of the gross returns, or 120 dollars per acre. Assuming the land to be worth 200 dollars per acre, interest at the rate of six per cent. must be deducted from this amount, leaving a net profit of 108 dollars per acre. The average price of this grade of tobacco is from 13 to 16 cents per lb.; cured in the leaf. Tobacco, grown from the ordinary native seed, yields sometimes 2000 lbs. to the acre, but the average price is only eight cents per lb. The successful curing of tobacco requires great experience, as the crop can be easily damaged by overheating in the drying-house. The plants are raised on a piece of rich, virgin, sandy loam, and, when a few inches high, set out in the field, and if the ground is not sufficiently moist, the plants must be watered at setting out. The great enemy of the plant is the tobacco hawk-moth, or horn-blower of Maryland, *Macrosila* (*Sphinx*) *Carolina*, Linn, which is a large moth, the caterpillar of which, commonly known as the tobacco-worm, is very destructive to the leaf of the tobacco-plant when the worm is young, by eating holes in the leaves, thus spoiling them for use as wrappers for cigars, and, when old, by devouring the whole of the leaf. The egg is deposited singly on the leaf of the tobacco plant, and the young worm when hatched, by the heat of the sun, commences to eat holes in the leaf, and sheds its skin several times before attaining its full size; it then goes into the earth, and the pupa is formed in a subterranean cell, the late broods remaining as pupæ all the winter, and coming out as the perfect fly the following spring. The insect appears from June and July until late in the

autumn. It hovers in the twilight, like a humming-bird, over flowers, honeysuckle, and the *Datura Stramonium*—commonly called Jamestown “Weed” in the States—sucking the nectar by means of its long, flexible tongue, which, when at rest, is coiled up like a watch-spring under the head.

The tongue, when unrolled, measures four to six inches in length; and the caterpillar feeds also on the potato, red pepper, and tomato, as well as the tobacco. Various plans are adopted for the purpose of destroying these insects, such as driving turkeys into the tobacco fields, paying a small premium to children for killing the flies, as they hover over the flowers in the evening. Deep ploughing after the crop is harvested, destroys the pupæ, by exposing them to the action of frost.

The young plants in the beds are subjected to the ravages of flies—similar to the turnip-fly, which are, however, easily exterminated or kept off. It will be seen that tobacco culture, under favourable circumstances, is very profitable, but it cannot be successfully attempted on any but very rich land with an unstinted allowance for manure, of which properly decomposed stable manure is the best. A planter who is not prepared to dry his own crops, can often sell to “companies” who make this a business; but in this case a lower price per lb. will be obtained. Much of the tobacco land in the State has been so impoverished by continued cropping, that it will not produce a paying crop. Labour is, however, not much, if anything, over half the cost of that in the Northern States, and tobacco should be one of the most profitable crops in the South.

The climate of North Carolina ranges from the sub-

tropical on the coast to the temperate in the mountainous region. The annual mean temperature for the State is 59° Fahr. Mean for summer, 75°, winter, 43°; annual rainfall, 45 inches. The temperature for Ashville, elevation about 2,200 ft., is given for the transmontane region as follows:—mean annual, 54°; summer, 71°; winter, 38°. The maximum temperatures recorded for July and August, on one day in each month only, were 87° and 85° respectively; but there are days on which it will reach 90° and even more. The heat varies with the altitude. On the high lands in Yancy County it is too damp and cold to raise maize, and considerably cooler than at Ashville. At an altitude of 1000 feet and under, the thermometer will occasionally mark 100° or over, especially when a thunderstorm is impending. There is a great deal of rain in the mountain region, during the spring and summer months, as follows:—March, 4.55 inches; April, 2.80 inches; May, 6.70 inches; June, 4.70 inches; July, 6.40 inches. The humidity of the atmosphere and the sultry weather preceding frequent thunderstorms renders the climate somewhat relaxing, at any but the higher altitudes—from 3,500 to 5,000 feet; and in the small valleys and basins in this region, sheltered as they are from a full current of air, the heat is quite oppressive at times. It must be remembered that it does not require a high temperature to produce this effect, and 85° (in the shade) will cause much more discomfort than 100° in Minnesota, Manitoba, or California. People coming from the sweltering regions of the South, Pennsylvania, Philadelphia and New York, the two latter especially, are charmed with Ashville; the nights are cool and pleasant as a rule, and after living in an oven it is a



happy change to sit outside anywhere. The autumn and winter in this region is much the pleasantest period of the year; except for the inhabitants of tropical regions. Except on the high mountains the climate is not, by any means, free from malarial influence. Along the French Broad, and on the banks of sluggish streams, and in some of the basins between the mountains, ague and bilious fevers prevail in the autumn, and quinine (called qūi-nine) and mercurial preparations are freely dispensed, and taken *ad libitum*. Taking it all the year round, however, the climate of this transmontane, and also of similar elevated regions in the Cumberland Mountains, is much superior to that of the majority of the States in the Union. The climate of the cotton and rice producing counties is exceedingly warm, oppressive and debilitating, and very malarious, especially in the vicinity of the rice lands, and even the acclimatised planters leave and go north during the hot season and most malarious periods. Negro labour is an absolute necessity for the cultivation of crops in the lowlands of North Carolina, for very few white men can withstand the enervating influence of the climate.

The inhabitants of the mountainous regions of the State are for the most part a very primitive set of people, living in rough log-cabins, cultivating a little corn, and keeping a little stock which ranges free on the mountains. They live in the rudest manner, and their diet consists of hog, hominy and coffee, principally. The hog is eaten in the form of fat bacon, swimming in grease; and hominy is a preparation of maize or corn. Occasionally fresh meat, either game or beef, is procured, which is fried in bacon fat, in thin strips. At other

times, on special occasions, a chicken is run down by the juveniles of the family, decapitated, and what little flavour there may be in it abstracted by dipping it in boiling water in the feathery process. This is then cut in small pieces and fried in fat, and together with some hot flour biscuits or rolls, reeking with soda, and black coffee, constitute a feast. They have no knowledge of cooking beyond this, and boiling plain vegetables. Along the borders of this State, and West Virginia and Tennessee, in places remote from railway communication and even proper roads, a lawless set of miscreants exist, who can elude capture, when attempted, by going from one State into another, and against whom peaceable inhabitants are afraid to "inform," fearing retaliation, which would certainly follow. These districts are, therefore, not desirable as a place of residence by respectable people, and until they are rendered more accessible, there is not likely to be much improvement in the state of society. It is, however, on the borders of West Virginia and Kentucky, that outlaws most abound. Family feuds have been maintained for years, and illicit distillation of whisky, in defiance of revenue officers, is a common business. The celebrated Hatfield-M'Coy feud has raged ever since the war of secession. Eight persons have been murdered (some of them shot in the back) and nine persons wounded and seriously injured. Of the few members of these gangs recently brought to trial, only one, a friendless servant of one of the leaders, who says he was forced—on penalty of death—to participate in their crimes, has been sentenced to death; this being the first legal execution to take place in the history of Pike County, Kentucky.

Three others, including a Justice of the Peace, although equally guilty, are sentenced by the jury to imprisonment for life, but their friends hope to mitigate even this sentence. The jury having the power of sentencing criminals in Kentucky, one of them in this case objected to hanging, as in the Cronin murder case at Chicago. The leaders of these gangs are still at large, and even living now within reach of the law, with impunity, well armed, and defying all authority. It is now reported that State troops (militia) are utterly unable to cope with these ruffians, and that the captain of the militia has been hiding for days, fearing to return to his home. Forty per cent. of the people are said to sympathise with one or the other party of these men, and as they are well fortified in their strongholds, in a rough mountainous country, and have information from their friends and others who are terrorised, it is difficult for any armed body or posse, to approach them.

When it is considered that this sort of lawlessness has been in existence for years in some of the oldest States in the Union, it will naturally be inferred that there is something rotten in their methods of government, if it can be called such. All through the Cumberland Mountains, between Kentucky and West Virginia, and extending into Tennessee, are pleasant and desirable places for settlers, with a similar, if not better, climate to that of the highlands of North Carolina; but until law and order is established, and the outlaws routed out, neither life nor property will be safe. These men, accustomed to the constant use of the rifle in hunting, are deadly shots, and it is difficult to organise a "posse" in their pursuit. Comparatively few cases of lawlessness have occurred in

the mountains of North Carolina; and, beyond knocking over a "revenue officer" now and then, the mountaineers are peaceable.

Some years ago a clever trick was played on a revenue officer in this State. The illicit distillers in the mountains desired to run out a lot of whisky, distilled from maize. They therefore prepared a waggon-load of whisky barrels, filled with water, and having a wooden tube inserted into each barrel, containing whisky, and into which the bung fitted. This load of barrels was conveyed to the sea-coast by one route, and by another (parallel one) a large "run" of whisky. The revenue officer had been on the alert for some time, and a pretended confession was made to him by one of the smugglers, which led to the discovery of the load of barrels prepared for him. The driver of the waggon protested that it was not whisky, but the officer in triumph produced a sample from the tube, and, with the satisfaction of a man who has made a skilful capture, proceeded to secure his prize. In the meantime, however, the party in charge of the "real run," who had been secreted, succeeded in getting off the whole of it. When the officer discovered the trick played on him, he was so laughed at that he left the country.

Within the past year or two railways are being laid out, which will intersect the transmontane region, and effect much improvement in the establishment of new settlements, and by bringing a desirable class of settlers into the country. From the description of the various counties and their soils, prepared by Prof. W. C. Kerr, late State Geologist and Special United States Census Agent, intending settlers will, in a measure, be able to

select a county which may meet their requirements. The counties of Henderson, Rutherford, Buncombe, and McDowell, and others intersected by the lines of railroad, offer superior social attractions. The price of land varies with the distance from market and quality of the soil. In cases where the soil is much impoverished by continuous cropping, farms will be offered cheap. Houses and outbuildings and fences will be very poor and dilapidated. The best quality of "improved" farming lands can be purchased from 15 to 25 dols., or, in exceptional cases, 40 to 50 dols. Unimproved land sells from 3 to 10 dols. per acre. The swamp lands of the eastern portion of the State are said to contain quantities of lands of high fertility, requiring drainage and clearing of timber; and such lands can be bought at 1 dollar, and even less, per acre, and would produce heavy crops. The counties in which these lands are found are Camden, Pasquotank, Perquimans, Chowan, Dare, Tyrrell, Hyde, Pamlico, Craven, Onslow, Pender, Brunswick, Hertford, Pitt, Green, Lenoir, Duplin, and Columbus. In Perquimans there is a considerable amount of semi-swamp land, easily drained; but in Dare it is little above tide-level. In Brunswick, along the Cape Fear, are some of the finest rice lands in the country. Marl is abundant in a number of counties, widely distributed, and is of four kinds, *viz.*, green-sand, eocene, miocene, and Triassic; and is found in Beaufort, Bertie, Bladen, Columbus, Duplin, Edgecombe, Gates, Halifax, Hertford, Lenoir, Martin, Nash, Pender, Pitt, Sampson, Wilson, and Wayne. It unfortunately happens that the most fertile lands are all situated in the most unhealthy portion of the State. The natural fertility of the soil, supplemented by the



use of marl, will give satisfactory returns for capital invested. Rice is a profitable crop, when cultivated under favourable circumstances. Brunswick, the chief rice-producing county, gives a crop of 1,163,852 lbs., for 10,846 acres; or about 781·33 lbs. per acre, which, at 3 cents per lb., would give 23·44 dols. per acre; and, deducting 8 dols. per acre for the cost of cultivating and cleaning, we have a net profit of 15·62 dols. per acre, not including the value of the straw, which is worth, at least, 10 to 15 dols. per ton. Very much larger crops have been produced: 1,282·50 lbs. per acre, and a net return of 90 dols. per acre, at Mobile, Alabama, is recorded. North Carolina rice is the finest in the market. Rice planters usually retire from the very malarious influence of the rice lands while the crops are maturing: the cultivation must be attended to by negroes. A very successful method of cultivation is described by a planter in South Carolina as follows:—A plot of land, little over two-fifths of an acre, was planted with golden rice. The ground was thoroughly ploughed, cross-ploughed, and harrowed: rows eighteen inches apart were then laid out, with a bull-tongued plough, and seventeen quarts of seed used, covering and pressing down with a hoe, and with the feet tracking on the seed. In the middle of May the crop was hoed once, and the grass removed by hand; and then water was turned on and kept flowing through the rows until July 1st. Water was then turned off, land hoed, and then water turned on again, and kept running through the rows until the rice began to turn, when it was gradually drawn off. The crop was carefully thrashed, cleaned, and measured, and the enormous yield of 56·50 bushels (of 45 lbs.) in the hull,

was obtained, being at the rate of 136.75 bushels per acre.

Most of the upland farms in the State are in a more or less exhausted condition, and this prevails, to a considerable extent, throughout the lowlands. Cotton and tobacco are very exhausting crops, and require the liberal use of fertilizers; which has been too much neglected. There is abundance of marl, a most excellent fertilizer; and it has been found that the mixture of about three per cent. of it with good stable manure, distributed between the layers, increases its fertility 10 per cent. The liberal use of marl on depleted land, followed by seeding with clover, is one of the best and cheapest ways of restoring its fertility. The average production of cereals is an exceedingly low one; thus, that of corn (maize) is 12.15 bushels per acre; wheat, only 5 bushels per acre; and oats, 7.66 bushels per acre. Cotton, tobacco, rice, and maize are the only crops which offer a chance of remuneration; at this rate, the three former require very rich, and naturally good soil, and the latter, the free use of fertilizers. On the uplands and throughout the mountainous regions, clovers, especially white, cocksfoot and other grasses will flourish, and the raising and feeding of stock will be a profitable industry. Grapes do well, and if cultivated to a limited extent, in the vicinity of new and increasing market facilities, will be profitable, and if a market can be obtained, wine making will also pay. The following varieties of grapes do well:—Concord, Catawba, Isabella, and Scuppernongs; the latter, only for wine making. Immense crops can be raised, but there would not be a market for the fresh fruit probably. The Concord grape, the hardiest variety, will bear enor-

mous crops. Vines planted eight feet apart will give six hundred to the acre, bearing, as a full crop, 20 lbs. per vine at least, which would be 12,000 lbs. At 2 cents per lb., allowing half the proceeds for expenses of cultivation, a handsome profit can be made. These grapes sell in the shops for six and eight cents a pound.

Mr. Frœlich, a man of great experience in grape culture, gives the following method of making wine in North Carolina. Great care is used in gathering the grapes. On a frame 12 feet square a strong cloth is spread, having an orifice in the centre, about a foot in diameter, under which is placed a barrel or box. The grapes are gently shaken into the cloth, sinking down through the hole. Persons can in this way gather 1,000 bushels a day. The grapes are then mashed in a grape mill, so constructed as not to crush the seeds or bruise the skins; thus avoiding the bitter oil of the former, and the peculiar acid of the latter. They are then put into an open cask, with a false bottom, through which have been bored about three dozen half-inch holes. In six hours, juice amounting to two gallons a bushel is obtained. This juice will make an excellent wine without any qualifying substances. The mashed grapes are then pressed in a mill, and will yield two gallons of wine more per bushel. This is made into wine by gallizing. If the juice, either dripped or pressed, shows 80% of sugar (Oeschle's scale), it will make a normal good wine. If the acid is from 6% to 9% it indicates a pleasant wine, but if too great it must be thinned with water down to the standard. If Oeschle's scale shows less than 80%, sugar must be added to bring the grapes up to that figure. After this is regulated, the wine is put into clean

casks, leaving a clear space of a finger-length from the bung-hole. A curved fermenting tube is then fastened air-tight in the bung-hole, and its outer end immersed in water, permitting the fermented gas to escape, and preventing the entrance of air. This prevents the conversion of a large portion of the grape-sugar into acid, instead of alcohol, and the loss of bloom and flavour; all of which are the result of bung-hole fermentation. The wine also ferments more equally and perfectly in large casks, with stout staves and heads, than in small, thin barrels. The loss of wine oozing through the latter is estimated at five per cent. per annum. The fermenting period lasts three weeks; the tube is then taken away and the cask filled and closed air-tight. About Christmas the clear wine should be racked into another cask, which should be filled full and closed air-tight. The loss from leakage should be continually replaced, leaving no vacant space in the cask, in which acid may be generated. The wine should be racked again about the 1st of April, and on the 1st of October. It should be racked, annually, afterwards, about the latter named date. It is ready for market about two weeks after the second racking, but will be still better after the third. The sediment from the first racking should be collected and permitted to settle again. About half of this will be good wine; the remainder may be distilled into brandy, or made into vinegar. Mr. Froelich states that the Scuppernong grape will yield 400 to 500 gallons per acre, from which 1,600 to 2,000 gallons of juice may be made. From the juice of one acre he states that 300 gallons of brandy, or 3,000 gallons of vinegar may be made. He insists upon great care in the selection of well-rooted plants, raised from

thrifty ripe wood, in the establishment of a vineyard. The best are one-year-old limbs not over one-fourth of an inch thick. They can be raised only by layers, and will not grow from cuttings. They should be laid about February, and be well rooted for planting in the following autumn. This wine has been mostly sold by the 1,000 gallons in New York for champagne. Of the Scuppernong variety, Mr. Froelich cultivated several varieties, having the following saccharine strength, Oeschle's scale :—White Seedling, 95%; White Scuppernong, 80%; Flower 88%; Black Scuppernong, 82%; Pamlico, 80%; Thomas, 90%; Tender Pulp, 80%; Sugar Grape, 80%. The White Seedling and White Scuppernong make a delicate straw-coloured wine, the others a red wine ; and they all ripen in October.

The best soil for a vineyard is sand, underlaid by clay, and naturally drained. The vines are planted, two and two, in holes four feet square and two feet deep, filled three-fourths with top soil, and one-fourth of compost as rich as possible. Plant in December, covering the roots four inches deep, later plantings six inches deep. After the vines have commenced growing the first season, all the side sprouts are pinched off, only the main shoot being allowed to grow. This is done in summer, when the wood is green. The Scuppernong will not bear winter pruning, as it will lose too much sap.

Americans have not been a wine-drinking people, but should the use of the native wine become more general, the probability of which has been suggested, the industry of wine-making in North Carolina may be a profitable one. Apples, pears, and other fruits do well, and the slopes of the uplands are admirably suited for orchards.



In a season in which fruit is universally abundant, the markets are sure to be overstocked, but the finest varieties of superior quality always command a market, and only these should be cultivated. In Alleghany County, 1,000 bushels to the acre have been yielded, but as the price was only 15 cents per bushel, the fruit was left to the hogs. (Apples are worth 1 dollar per bushel at this time.) In Franklin County (on the oak uplands) an orchard on the brow of a hill with a "northern" exposure failed only three times in 12 years, but one, 150 yards distant—with a southern exposure, bore but three or four good crops in that time. In Lincoln County, 400 apple trees, planted 50 feet apart, yielded from 500 to 600 barrels per annum, worth about 1,000 dols. In the same county three-quarters of an acre of grapes produced 4,500 lbs., giving 300 gallons of wine. In Henderson, Buncombe, and other counties having the advantages of railroad transportation and new markets in the south, some attention is being given to the cultivation of the coarser vegetables which bear transportation well, such as cabbages, etc. Large profits can be made in this way when a good market can be found, not too far off. There is an increasing demand for vegetables at the new manufacturing centres in the south, and at various points in which new lines of railroads create business and increase population. Farmers, as a rule, barely grow enough vegetables for their own use, and those of the coarsest and commonest kinds. A gross return of 200 dols. per acre, and 100 dols. net, is often made on one acre of cabbages in other States.

The principal shooting to be obtained in this State is that of quail and wildfowl. Quail are abundant in

many places at some little distance from lines of travel, and ducks are abundant on the estuaries along the coast, and Currituck Sound is a favourite resort. A number of small islands dot the shallow waters of the eastern side of this Sound, which abounds in wild celery and other grasses. Thousands of mallard, red-headed and canvas-back ducks, frequent these waters, which are resorted to by numerous sportsmen from all parts, and professional hunters also abound, who kill and send the ducks to the large cities. Many Northern sportsmen have "clubs" formed and shooting-boxes in this region; there is, therefore, a great deal of shooting done, and ducks are very wary. There are numerous inlets and swampy places along the coast in which, perhaps, a better bag could be made than at Currituck. In the mountain regions a few deer and wild turkeys may be found by selecting one of the counties remote from railroads. There are some small trout in many of the mountain streams, but they are much poached, and often destroyed by dynamite being thrown into the pools, and are getting very scarce.

The whole coast is girdled by sand banks, extending from the northern extremity like a long, narrow peninsula, and divided in their course into a number of islands. They vary in breadth from one hundred yards to two miles, and in height from a few feet above tide level to twenty-five or thirty feet. Very little cultivation of the soil is done by the fishermen who live on these banks, and they are, for the most part, treeless. Flocks of sheep and cattle, and herds of horses graze on the coarse and abundant grasses of the salt marshes.

Whales used to be numerous along this coast, but only a few visit it now.

Shipwrecks used to be frequent on these banks, and wrecking was one of the chief industries of the inhabitants; but improvements in the way of lighthouses and signal stations have done away with wrecks, which seldom occur here now. There are a number of sounds and inlets, chief of which are Pamlico and Albemarle; the former about seventy-five miles long, and fifteen to twenty-five wide; the latter fifty miles long, and five to fifteen in breadth. These sounds abound in fish of good quality, but the principal fishing stations are in Albemarle Sound. The Roanoke and Chowan Rivers render its waters fresh, except at its eastern limit. Here migratory fish—herring, shad, and rock bass—resort in large numbers at the spawning season, and a large fishing business is established; the seines being from one mile to one mile and one quarter long, and drawn by steam-power. Sometimes 200,000 fish are caught at a haul, packed in ice, and shipped to the Northern cities. Along the Southern coast mackerel, mullet, sheepshead, blue, and pig-fish, are most esteemed for their flavour. A good centre-board sloop filled with a small cooking and heating-stove, provisioned, and with a punt in tow, is an excellent way to enjoy both shooting and sea-fishing along the coast. The red-perch, a game fish weighing often  $1\frac{1}{4}$  lbs., is found in the New River, in Onslow County, and south of that. The bream is found in all streams emptying into the Gulf of Mexico, and as far north and west as the Green River in Kentucky, and in some tributaries of the Mississippi on the north. It is found in the Neuse River in North Carolina, and in the

St. John's River, Florida. Lord Cornwallis is said to have admired this fish so much that he considered South Carolina worth capturing for that fish alone. This fish is very shy, and the finest of tackle is required for its capture, which it resists desperately to the last. It is a bottom feeding fish, and is excellent for the table, it is said. October is the best month for fishing.

THE END.

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